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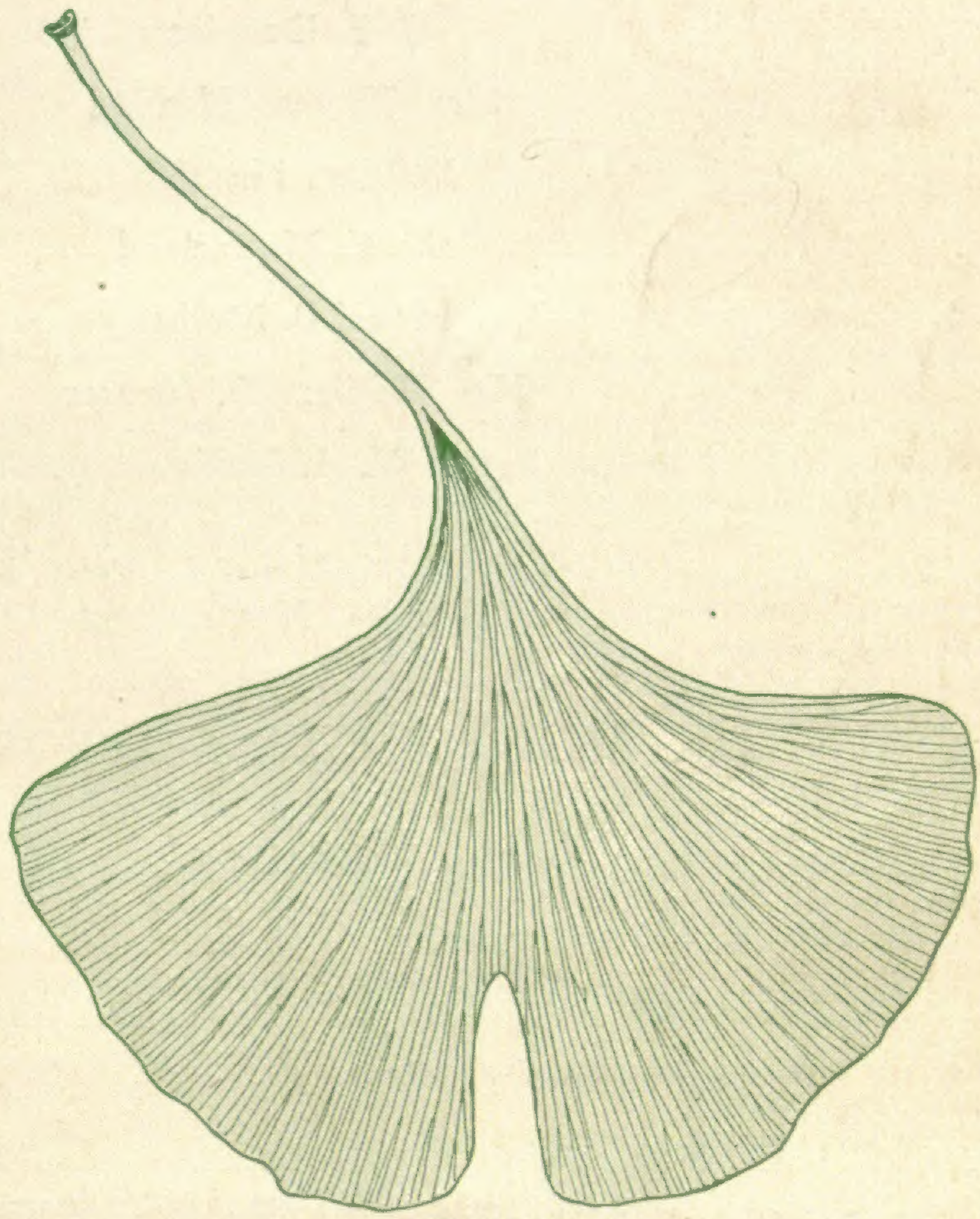

Ginkgo

AUTUMN 1950

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LASCA LEAVES

Quarterly Journal of the

LOS ANGELES STATE *and* COUNTY ARBORETUM

A CALIFORNIA ARBORETUM FOUNDATION, INC. PUBLICATION

VOL. I OCTOBER, 1950 No. 1

THE LOS ANGELES STATE AND COUNTY ARBORETUM

R. J. SEIBERT

"*Arboretum*" is not a new word, nor just a fancy name for a park. It is a living collection of named and labeled trees, shrubs and other plants which can be grown within the area it serves. Essentially an Arboretum is an educational and scientific research institution with specialized personnel devoted to the importation, trial, improvement and display of new and useful plants.

Daily we are confronted with the realization that distance is no longer of significance. We, as Americans, are far from being an isolated and entirely self-sufficient population. We find ourselves munching a nut from Brazil from a can containing Bolivian tin. Our coffee comes from Costa Rica or Colombia. Our car tires contain a proportion of natural rubber from Sumatra—yes, and a dominant tree in the Southern California landscape is Eucalyptus from Australia—despite the GI who expostulated when he arrived in Australia: "Oh, I see you grow 'our' Eucalyptus here too!"

We are surrounded with countless necessary articles of every day life which came to us from distant lands and about which we know almost nothing. We lead the world in know-how of utilization but know relatively little about the origin of many of the raw product sources of our productive utilization. Plants and plant products are fundamental to the life and existence of every human being, every bird and every animal. It is an essential responsibility for each community to know its plants, to enjoy and appreciate them and to be conscious of possible new plants which can esthetically or economically improve the community.

The occasional traveler of the past and the specialized traveler of this century has tried admirable plants from other parts of the world in his own community or backyard at home. This has proved that plants exotic to a specific area, if properly chosen from regions with similar climate and other natural conditions, may greatly enhance and economically enrich that area. Frequently it is found that if conditions are favorable, a plant may be significantly better cultivated far from its native haunts than as a native species in its original habitat. For example, since mission days Southern California has received increasing numbers of foreign plants, many proving to be perfectly at home under our climatic and soil conditions. Today, our urban, suburban and agricultural areas actually are dominated by plants brought here from other parts of the world.

That exotic plants mean so much to the present landscape of Southern California is not fully realized—nor is it fully realized that there is no institution here devoted to the study of these exotic cultivated plants as a whole. Certain individuals and organizations have considered the problem, but there is no focalized center for the vast field of introduction, thorough testing, and improvement of new plants from many parts of the world which are or can be made specifically adaptable for this region—plants which can and will add to the further beautification of our gardens, parks and streets—plants which require less watering and care than many

now in customary use—plants which could be of direct economic bearing on the future of Southern California.

California Arboretum Foundation, Inc., a non-profit corporation, is developing and managing the Los Angeles State and County Arboretum under an agreement with the Los Angeles County Board of Supervisors. Title to the property is in the State of California, which has leased it to Los Angeles County for fifty years.

While the site already is planted to large trees of botanical and horticultural interest, it is intended to extend and develop this planting under a broad master plan. It is proposed that the Los Angeles State and County Arboretum become:

1. The horticultural center for Southern California, providing facilities for the promotion of horticulture and floriculture; fostering more extensive and intelligent use of ornamental plants and trees to enhance the beauty of Southern California's gardens, parks and parkways.

2. A center for the introduction, testing and improvement of plants adaptable to Southern California.

3. A gardening school for training gardeners, garden superintendents, propagators and other skilled personnel required by commercial and private nurseries and gardens; with special events and a portion of the curriculum of interest to amateurs.

4. A center of research and scientific study, working in collaboration with educational institutions and with Federal, State and County departments of agriculture. An information center, maintaining a complete catalog of all plants cultivated in Southern California. Here specimens can be readily identified, and practical advice given on planting, propagation and cultivation.

5. A library and herbarium.

6. A publication center for bulletins, books and pamphlets of horticultural, botanical and historical interest.

7. A preserve of early California building and authentic historical gardens.

8. A bird sanctuary.

All Arboretum activities are devoted to the needs of Southern California. As a scientific institution and public Arboretum emphasis always will be placed on the translation of our findings for the practical use and enjoyment of the public. A brief recapitulation of our second annual report may be of interest in this, the first issue of the Arboretum quarterly publication.

We entered the second stage of institution development with the completion of a Master Plan prepared by architect Harry Sims Bent. It has been approved by the Foundation's Board of Trustees, the County Supervisors and State officials. Sufficient public monies were allotted for actual construction to commence on June 26. Private funds are continually being increased through memberships and donations towards specific uses.

The Historical Committee has been extremely active during the past eighteen months. Preliminary research and planning have been completed for the restoration of the Hugo Reid adobe, the "Lucky" Baldwin cottage and carriage house and adjacent historical gardens. It is anticipated that restoration work will begin early in 1951.

Our Master Plan provides not only for a valuable and beautiful Arboretum but also within its 120 acres, (originally the home site of Rancho Santa Anita) will emerge a unique historical preserve, of botanical and architectural interest. A bird sanctuary, too, centers around our natural, spring-fed lake.

Subsequent articles in "Lasca Leaves" will enlighten the reader on the subject of his special interest.

GINKGO

As the first in a series of cover motives for "Lasca Leaves" we are featuring the leaf of a tree brought to Rancho Santa Anita from China, many years ago, *Ginkgo biloba* L. The "Maidenhair" tree is known to some by the synonymous name, *Salisburia adiantifolia* Smith, no longer in valid usage.

This conifer is a representative or "relic" of an ancient flora, now existing only as a cultivated tree, a so-called "living fossil." Its origin is attributed to China and Japan since it was from those countries that it was discovered and introduced into Europe. Fossil remains, however, show that in past geological times it was found not only in Asia, but in western Europe, northern California, Greenland and in other parts of the world as well.

No one has proven its living existence in the natural state. In China and Japan it is associated with temples, shrines and palaces, having been perpetuated as a cultivated ornamental tree, and as the oldest known nut tree. Its seeds are roasted and used as a dessert nut in the Orient.

The Arboretum has seven specimens, the largest of which measures 19 inches in diameter and 90 feet tall. These trees were planted by "Lucky" Baldwin around

the Coach Barn. Mr. Baldwin visited China in 1873, thereafter having direct contacts in that country. Presumably the trees were planted from seed obtained there between 1875 and 1880. Two of the trees are female. Our finest and largest specimen is a male tree of the *pendula* form.

The Ginkgo was first introduced into the United States near Philadelphia about sixty-six years before California became a state. Mr. H. M. Butterfield, of the University of California Agricultural Extension Service, informs us that it was listed in San Francisco nursery catalogs during the latter 1850's, and that John Sutter of gold fame had the tree growing on his place above Sacramento in 1858. Information concerning the earliest planting of Ginkgo in the Los Angeles area is vague although there is a bare possibility that Ozro W. Childs may have had the tree at his nursery by the 1870's.

Ginkgo biloba, the only extant species of the genus, has several recognized forms, among which are *pendula, fastigiata, variegata, macrophylla,* and *laciniata*. The National Shade Tree Conference recommends Ginkgo as a street tree for Southern California, preferring the *fastigiata* form. For private gardens, however, the *pendula* form should take preference because of its attractive weeping habit.

Due to the foul odor of the mature fruits, female trees are not ideal. Trees propagated from seed are not distinguishable between male and female until they have matured to flowering size. Grafting or budding of scions from selected male trees to year old seedlings has been the preferred method of propagation. Recent improvements in techniques of rooting cuttings show this method as a promising means of propagation.

The Ginkgo is one of the few deciduous trees introduced into Southern California which shows beautiful golden autumn foliage. During the leafless period from about December to the beginning of March it shows an attractive, unique branching habit to excellent advantage. The Ginkgo withstands smoke, dust, drought, frost and automobile fumes of city conditions. Yes—it even withstands smog! It is a clean, attractive tree with no serious diseases or insect pests. Mature trees in the Los Angeles area require only about three artificial waterings per entire dry season, definitely a tree to put on your planting list.

Those not familiar with it would enjoy reading the chapter on the Patriarchal Ginkgo in Ernest H. Wilson's "Aristocrats of the Trees."

THE HISTORICAL BUILDINGS OF RANCHO SANTA ANITA

SUSANNA BRYANT DAKIN

Hugo Reid, the "Scotch Paisano," told a white lie in describing the house he built in 1839. Writing Governor Alvarado a year later, to secure clear title to Rancho Santa Anita, he said: "Assuming the land to be mine, I introduced all my farming possessions; I planted a vineyard consisting of a considerable number of vines and built a *house of stone*." The evidence of one's own eyes today, and of visitors to Santa Anita during Reid's day, indicates that this description was designed to impress the Governor, who had been slow about confirming a long-promised land grant. The home which Don Hugo shared with his Indian wife and children was built of *adobe* mud like every other residence in California of the '30s. It was unique not in construction, but in planting and natural setting.

Reid's own inventory (of June 1, 1844) aids us in visualizing the one-story, L-shaped *adobe* surrounded by extensive vineyards and a variety of orchard trees, besides the flowers which devout Doña Victoria received from the San Gabriel Mission *padres*, as slips and seeds from their typical mission garden. Don Hugo lists 40,000 grape vines; 21 fig trees, 7 plums, 25 pears, 5 apple trees, 32 oranges, 40 pomegranates, 2 honey mesquite trees, 240 peaches, 8 blood oranges, 3 walnuts, 7 olives, 40 lemons—in all 430 trees and a *tuna* (cactus fruit) patch.

Historian William Heath Davis, visiting the very year that inventory was taken, says of his host and hostess: "Both Reid and his wife are epicures, and they had everything (their own market place on the *hacienda*) to entertain visitors sumptuously. Doña Victoria had a fine Indian cook who had been educated in the art at the Mission of San Gabriel, though the lady herself superintended more or less in the preparation of our good living . . . Hugo Reid was the grantee . . . at the Santa

Anita rancho of about eight thousand acres. It was then the most picturesque spot of Southern California, with mountains, valleys, springs, and running silvery streams. You would observe in riding over the *rancho* its having more than its *pro rata* of towering and overspreading live-oak trees, *manzanita*, laurel, and other forest in comparison with other *ranchos*."

Today, Rancho Santa Anita has shrunk to the one hundred and twenty acres composing the Los Angeles State and County Arboretum. But the heart of it remains intact. Hugo Reid's *adobe* still stands on the southern side of the spring-fed lake. Some gnarled orchard trees seem old enough to have been planted by him. Certainly the ancient oaks date from his day and earlier. And the oldest eucalpts, among the first to have been brought from Australia, were introduced at Santa Anita by William Wolfskill, only a decade after Reid's death.

Descending down the chain of owners (prepared for us by the Title Insurance Company) we find among them the first circus owner in California who wintered some of his animals here; and the fabulous "Lucky" Baldwin who imported giant shells from the Great Barrier Reef, to be used as bird baths, and such trees as the rare *Ginkgo* from China which still flourishes on the open mall west of the lake. At the water's edge perches his pleasure palace (called "Queen Anne's Cottage") and a little way off, in the best state of preservation, is Baldwin's carriage house. Built in the florid style of the '70s, they contrast strangely with the simple *adobe* where Reid lived and Baldwin chose to die.

Time and termites have nibbled at all three structures, and a recent rot survey reveals extensive damage. But a reconstruction program is being planned which will encompass the buildings inside and out; will re-create living facilities such as the outdoor oven which served the Reid family well, and the *jacales* (bush shelters) where Indian servants once lived and raised families. The Master Plan of our Arboretum plantings includes historical gardens to surround and enhance each building. Eventually it is hoped that two ways of life in California—one simple and pastoral, the other complex and sophisticated—can be visualized through *informed* reconstruction, both architectural and botanical.

WASHINGTONIA FILIFERA

WILLIAM HERTRICH

The only palm indigenous to California is found in a comparatively small area, primarily in canyons on the desert side of San Jacinto. The trees are numerous in Palm Canyon, many growing amongst the boulders along the water-course, others adorning the adjacent slopes in a most bizarre fashion.

The tree *Washingtonia filifera* forms a heavy trunk measuring in diameter up to 36 inches, and growing ultimately to a height of about 100 feet. If undisturbed the four- to five-foot leaf stocks are persistant for many years forming, with the attached leaf-blades, a protective covering for the tall trunk. A common expression for this effect is "skirt." The large fan-shaped leaves, grey-green in color, are often five feet across, deeply cut, and carrying at their jagged tips and leaf margins numerous thread-like fibers.

Riverside County is the focal habitat of this palm, although isolated stands of it are known to reach as far south as San Diego County, and the northern limit appears to be in the vicinity of Corn Springs, San Bernardino County.

This particular species has been extensively planted in California as well as in countries bordering the Mediterranean. In all locations its use has been to landscape residential parkways, highways, parks and even home gardens. As far as the author is able to determine, there is no record available as to the exact date of the first transplanting of such palms from their native habitat for use in ornamental planting in Southern California. But the late Ernest Braunton and I gathered sufficient information to establish an approximate date in the year 1888, when there appeared on July 28th in the *Los Angeles Express* the following item:

> "Three of the stately palm trees which graced the Saunder's place (originally the Lugo estate) on San Pedro Street, have been purchased by the Southern Pacific to adorn its new depot site on the Wolfskill tract. The first has been successfully moved, and the other two will follow in a day or two."

As a matter of fact, only one of the four was actually moved, the other three being transported to a location on Washington Street in 1905. Braunton, as I recall, quoted: "W. H. Workman who came here in 1854 says they were conspicuous trees then, and he told me in 1905 he thought they were then about seventy years old."

Washingtonia filifera

Transplanted from Palm Canyon to San Marino between 1840-45 by a prospector named Stockton. Photo taken about 1860.—Courtesy Huntington Library.

The two oldest specimens alive in San Marino today (i.e. winter of 1949-50) are located at the intersection of Huntington Drive and Cambridge Road. The writer has gathered a few nubbins of information about them: they are at present about 90 feet tall and are about 110 years old. The late Isaac Cooper with his brother Tom and his mother, came to live in this region in 1855. The family took up residence in an *adobe* building close to where the two palms were originally planted—and where they are still growing! Mr. Cooper related to the writer the following information: when the family arrived in California the two palms already were known on the landscape of this area as "the twin palms." At that time they were approximately 10 to 12 feet tall, respectively; one has consistently been taller and one shorter through their history in this location. According to Mr. Cooper, the photograph of them pictured here — a retake of the original—shows the palms growing next to the Mission Ditch, with vineyards in the background. He apparently secured some additional information from a prospector named Stockton who had lived in the old adobe house prior to the Cooper's occupation of it.

While prospecting for gold in the San Jacinto Mountain areas, Stockton had occasion to go into the canyons for fresh water and for camping. He admired the stately palms growing there and was inspired to transplant a pair to a location near his home. So on one of his homeward trips he dug up two very small plants, wrapped them as best he could in wet grass and cloth, and strapped them on the back of his burro for the long journey home. The success of his efforts is evidenced in the two living specimens now proudly marked with a suitably inscribed bronze plaque furnished by members of the San Marino Garden Club.

In 1903 Mr. Huntington acquired the San Marino Ranch which included the land where the twin palms stood and also that on which the *adobe* house still stood. But when the estate was reduced to 200 acres —the permanent grant in accordance with the deed of trust executed by Mr. Huntington,—the area including the twin palms became part of a subdivision to be devoted to residential purposes. Mr. Huntington and the writer conferred seriously with regard to the moving of the two palms to a location within the prescribed 200 acres; but decision was finally made against it because of the conviction that the well-being of the trees might be impaired fatally in the moving process. It was gratifying to have the ground so subdivided that the future growth and safety of the pair of trees was reasonably assured. At the present time, they are on the rear of private property near Cambidge Road, under the care of Dr. and Mrs. Floyd P. St. Clair.

ARBORETUM BIRDS

W. DAN QUATTLEBAUM

The area of the Arboretum is by nature and cultivation favorable to bird life. The open places with scattered trees, the high trees and dense woods and the pond, fed by unfailing springs, with its marshy edges, combine to attract various land and water birds. 148 species of birds have been identified in the Arboretum. Of these, 40 are residents, 61 migrants or winter visitors, 8 summer residents and 39 occasional visitors.

It is the only nesting site, in a radius of about 12 miles, of the green heron, the black-crowned night heron, the red-bellied hawk, the russet-backed thrush and the tule yellowthroat. The pond, with its patch of tules, seems to be the only stopping place, in a radius of some 20 to 30 miles of the two recent visitors, the Florida gallinules.

A pair of pied-billed grebes, which build a floating nest among the cattails or tules, raise 3 to 4 broods every year. They seem to have either a nest or young on the pond every month of the year. Early in the fall flocks of band-tailed pigeons and robins feed on the abundant wild grapes, and during December the bluebirds and cedar waxwings feed on the fruit of the Mexican fan palm.

GROWING NOTES

GEORGE H. SPALDING

FIRST OF A SERIES

One of the major phases of the program at the Los Angeles State and County Arboretum is the propagation, growing and testing of plants from all parts of the world with a climate similar to our own. In surveying the climatic areas of this great world of ours we find that there are about five similar to Southern California: Western Australia, South Africa, the central Andean section of South America, and parts of China and India. It is our plan

to grow here on our grounds as many of the worth while plants from these areas as we can obtain and our planting space will permit.

We have started our project with Australian material. Southern California gardeners already are familiar with a few of the plants from the vast store in the "land down under." Well known are the *Acacia*, *Eucalyptus*, Bottle-Brushes, *Callistemon* and *Melaleuca*, Geraldton Wax Flower, *Chamaelaucium uncinatum*, to name just a few. However, the surface has hardly been scratched. The plants from that area now being grown here are but a very small fraction of what we can and should be growing.

In this day of water shortages and attendant problems, we must look to low rainfall areas for plants to enhance our gardens, roadsides, and parks. If we can decrease at the same time, the water and work necessary to maintain our gardens, certainly it will be a real service to the community.

Many West Australian native plants thrive under much the same conditions as our California natives. What could be more logical then, that we grow and test more of these plants?

Let's take a look at the growing requirements, in general, of West Australian plants. A well-drained soil, not too fertile, full sun and, once established, very little water. Undoubtedly a well-drained soil is ideal, but experience seems to point to a greater tolerance in this respect than formerly was realized. Care in watering is more critical. In other words, although West Australian plants will do best on a well-drained soil, they also will do well on heavier less well-drained soils if care is taken not to *over water*. The average rainfall in much of Western Australia is 10 to 14 inches, about the same as most of Southern California. Under no circumstances should artificial fertilizers be used, though occasionally a small amount of bone meal may be beneficial. The food requirements of this group of plants is such that most of our soils are sufficiently fertile when properly worked. Leafmold has been used in all soil mixtures at the Arboretum and has proved very beneficial.

How can we acquire these interesting and useful plants? The only feasible way, at the present time, is to grow them from seed. Few are available at nurseries, and the importation of plants is not practical. In the course of germinating some 98 species of Australian plants, we have learned much of interest about them. There appears to be a general belief among gardeners that these plants are hard to grow, and past failures experienced by many who have tried to grow this group of plants have increased this belief. We are receiving enough seed of many species so that different methods of germination can be tried.

In the course of our experiments we have discovered that a mixture of Georgia Peat and Sponge Rok, half and half, gives excellent results as a germinating medium. We also have found that firing some seed flats is the best way to obtain earlier germination. *Banksia* and some species of *Grevillea* respond very well to this treatment. The seed is planted as usual and the flat thoroughly soaked; then about six inches of straw is placed on the flat and fired. Thereafter, the flat is treated like any other seed flat. *Acacia* seeds are placed in a container of boiling water which is removed from the fire in about thirty seconds. We usually treat these seeds in the late afternoon and allow them to stay in the same water until morning. A test was run with *Acacia* seeds in which they were given the boiling water treatment. A portion of these seeds were planted immediately after the water had cooled off, in about an hour. The balance was left to soak over night. All the seeds germinated well, but the seeds left overnight broke through in about a week, while the portion soaked only an hour took a week longer.

Many soil mixtures have been and still are being tried in the course of our experimentation. To date, the best results have been obtained with a 3-2-1 mix. 3 parts leafmold, 2 parts sand, and 1 part soil. We have been using a fairly heavy soil. With a light sandy soil, a 3-2-2 mix would probably give as good results.

It should be clearly understood that this mixture is being used for seedlings and young plants up to gallon can size. Probably a different mix will be needed for 5 gallon and larger size containers. Our plants here are just reaching this size and new mixtures for the larger sizes will be tried. After sufficient time has elapsed we shall report from experience on other soil mixtures.

A report, based on Arboretum records, on the germination periods of various species of Australian plants rarely grown here, will be distributed later by the Arboretum.

SEED AND PLANT DISTRIBUTION

The Annual membership meeting on the Arboretum grounds held June 13, 1950, was climaxed by the first distribution of seeds and plants to members. Seeds included:

Cyphomandra betacea
Desmodium sp.
Harpephyllum caffrum
Heimia myrtifolia
Pavonia praemorsa
Pterocarya stenoptera
Rhigozum brevispinosum
Tipuana tipu

In addition, each member was given a choice of three potted plants among:

Eucalyptus erythrocorys
Eucalyptus erythronema
Eucalyptus megacornuta
Callistemon speciosus
Calothamnus sanguineus
Chaenostoma grandiflora

GIFTS RECEIVED

OCTOBER 1, 1949, TO JUNE 30, 1950 (Exclusive of Money Donations)

American Begonia Society	4 Booklets
Anonymous	1 Book "American Men of Science"
Ayres, Jr., Dr. Samuel	9 Books, 315 packets of seed
Ceres of California	1 Sack of Sponge Rok
Chuck's Nursery	3 Sacks of steer manure
Cymbidium Society of Pasadena	17 Books
Dakin, Mr. Richard Y.	1 Book "Lucky Baldwin" by C. B. Glasscock
Dakin, Mrs. Richard Y.	Original painting of the Lagoon by Allan Gamble, Professor of Architecture, University of Sydney
Darland, Charles	5 Plants - *Hakea* spp.
Fleming, Mrs. Thomas	5 Books
Forbes, Jr., Ian, & Ferguson, Marvin H.	1 Book
Gale, Col. C. M.	1 Pamphlet
Hoak, Charlotte M.	Manuscript "Trees and Shrubs of New Zealand" by the late Katherine D. Jones
Horton, Jerome	1 Book
Howard & Smith Nursery	2 Large sacks of Georgia Peat
Howard's "Flowerland," Paul J.	30 Plants of *Fatsia japonica*
Jessop, A. W.	2 Books
Kelsey, Harlan P.	Set of "American Forestry"
McCaffree, J. E.	11 35 mm. Kodachrome slides of Arboretum 12 35 mm. Kodachrome slides of Pasadena Gardens 1 35 mm. Viewer 1 SVE-AAA Projector 35 mm. 1 40x40-inch Radiant Screen
Menninger, Mr. Elmore	4 Books
O'Donnell, Dr. John	2 Books
Philips, Amy J.	1 Plant - *Idria columneris*
Purdy, Elmer C.	Copy of Monograph on Calochortus
Rancho Santa Anita, Inc.	1 Booklet "Romance of Rancho Santa Anita"
Roberts, Mr. A. W.	35 Books on Roses
Samms, Charles	64 Plants of *Prunus lyonii*
Saunders, Mrs. Mira	2 Books "The Story of Carmelita—Its Associations and Its Trees" and "Trees and Shrubs of California Gardens" by Charles Francis Saunders 3 Original drawings used for illustrating "The Story of Carmelita"
Seibert, Dr. Russell J.	4 Pamphlets and books
Southern California Camellia Society	2 Pamphlets
Southwest Museum	2 Pamphlets
Van Rensselaer, Dr. Maunsell	13 Books and pamphlets
Verdoorn, Dr. Frans	49 Books
Walker, Winslow M.	2 Pamphlets
Went, Dr. Frits W.	1 Book
Woodard, Mr. E. H.	2 Plant urns

MEMBERSHIP

Annual Associate Membership	$ 5.00
Annual Membership	10.00
Annual Contributing Membership	25.00
Annual Sustaining Membership	100.00
Annual Sponsor Membership	250.00
Life Membership	500.00
Founders	1000.00 or more
Benefactors	5000.00 or more

CLUB MEMBERSHIPS are available, at any amount,
from $10 a year or more.

ALL CONTRIBUTIONS DEDUCTIBLE UNDER
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Checks should be made payable to the California Arboretum Foundation, Inc., and sent to our headquarters at 291 North Old Ranch Road, Arcadia, Calif. Phone DOuglas 7-3444.

The Los Angeles State and County Arboretum is operated by California Arboretum Foundation, Inc., a non-profit corporation. The Foundation is developing and managing the Arboretum under an agreement with the Los Angeles County Board of Supervisors. Title to the 120 acres of property is in the State of California, which has leased it to Los Angeles County for fifty years.
Construction operations are actively commenced by the County of Los Angeles in accordance with the master plan of the foundation prepared by Harry Sims Bent. Because of safety hazards the Arboretum is closed to the public during construction.

Operated By

California Arboretum Foundation, Inc.

LOS ANGELES STATE and COUNTY ARBORETUM
ARCADIA - CALIFORNIA
QUARTERLY JOURNAL

Lasca Leaves

California Pepper Tree

WINTER 1951

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LASCA LEAVES

Quarterly Journal of the

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A CALIFORNIA ARBORETUM FOUNDATION, INC. PUBLICATION

R. J. SEIBERT, EDITOR

VOL. I JANUARY, 1951 No. 2

FORECAST FOR THE FUTURE

MILDRED E. MATHIAS

DEPARTMENT OF BOTANY, U.C.L.A.

The future of horticulture in Southern California is a promising one, based on a heritage rich in horticultural traditions. The rows of palms, pepper trees and eucalyptus which silhouette our sky-lines, the fine old trees in our parks, the old gardens of Pasadena, San Gabriel and Santa Barbara, all bear witness to a history rich in plant materials, and form a worthy foundation for future developments.

Every home owner is a grower of plants. Every community boasts one or more garden clubs. There are active branches of national societies interested in roses, camellias, fuchsias, begonias, cacti and succulents, bromeliads, dahlias, iris, orchids, bulbs, etc. It would be a full time assignment to attend all the local meetings of plant enthusiasts. The Los Angeles classified directory lists some 800 separate items for firms dealing in plants, garden services, landscaping, etc. The wholesale flower market alone is a business approximating $20,000,000 annually.

The climate of Southern California varies widely from coast to interior, sea level to high mountains. Because of this climatic divergence there is the opportunity for a horticultural diversity probably as great as in any other part of the world. Are we taking advantage of our opportunities? The nurseries offer plants the public wants. But the public has no way of knowing other plants not offered by the nurseries which may be equally or more desirable. The situation is static.

It is a primary function of a botanical garden to present a growing collection of a wide variety of plant materials obtained from all over the world, a place where the professional and the amateur alike can see not only the old favorites but also new and exotic plants. Without access to such a collection the public has no way of becoming familiar with new plant materials. To be sure we do have special collections such as Rancho Santa Ana Botanic Garden and Santa Barbara Botanic Garden for native plants, and a small collection of exotics at the University of California at Los Angeles. Other collections of exotics have been grown on private estates, some of which now may be visited by the public, such as the Huntington Estate in San Marino and the University of California Vavra Estate in West Los Angeles. But these special collections cannot fill the need of a public botanic garden.

The Los Angeles State and County Arboretum will fulfill this need. We have in this Arboretum the potentialities of a great garden—a display center for subtropical plants growing out-of-doors. Beyond that function we foresee the Arboretum as a horticultural center for Southern California with test gardens, display halls for flower shows, auditoriums for meetings, a working library, and a research center. Our present gardens will continue their outstanding work with native plants. The small arboretum of the University of California at Los Angeles will provide a growing and testing area for those plants which demand a coastal climate. The University has the nucleus of an herbarium of ornamental plants—a permanent source of reference and a must for maintaining records of what has been and is being grown for the identification of plant materials.

A manual of cultivated subtropical plants for Southern California is being prepared. This is a long time project requiring cooperation and financial support. Our vision for the future also includes an illustrated flora of the cultivated plants of the region. This flora will not be purely

descriptive but will record all available information concerning propagation and cultural methods, climatic needs, and other details which every plant grower would like to know. To continue this entire program it will be necessary to maintain and increase our reference collections of living plants and to continue the development of a permanent record in the herbarium of all the species and variants concerned.

Our plan for the future is not a grandiose one. It has not been conceived in an idle moment but is the result of a mature survey of the community needs by many plant-minded individuals. We shall build on our present structure—the garden club groups, the professional societies, the departments of botany and horticulture. Cooperation will be the keynote of the development. There will be a coordination of horticultural activity unparalleled in our past history dominated by the activities of the Arboretum with the cooperation of other botanic gardens, the universities, and the support of all garden plant enthusiasts. The millenium can be reached only with continued support. But when we do reach it we can truly call ourselves the garden center of America.

THE CALIFORNIA PEPPER TREE

H. M BUTTERFIELD

UNIVERSITY OF CALIFORNIA, COLLEGE OF AGRICULTURE, BERKELEY

The California pepper tree, *Schinus molle* L. of the South American tropics is usually associated with Peru. No doubt the followers of Cortez, at the time he conquered Peru in 1533, saw this interesting evergreen tree. It apparently came to the attention of Don Antonio de Mendoza, First Spanish Viceroy, whose office dates back to about 1551, for he is said to have sent seeds to Mexico. There the tree has flourished since those early days.

There is little documentary evidence to show when the first pepper trees were grown in California. Legend has it that the pepper tree was first planted at Mission San Luis Rey around 1825, but the legendary accounts of this sort are not always accurate.* Most likely a sea captain did bring seeds of the pepper tree to Mission San Luis Rey, and we do have excellent evidence that several of the trees were growing there in 1858. When members of the visiting committee of the California State Agricultural Society visited Mission San Luis Rey in 1858, they were impressed by these pepper trees and made the following report regarding what they saw in the patio of the Mission:

> "In the centre are several black pepper trees, full of fruit, one of which is over 15 inches in diameter and has on it several bushels of pepper; they were planted on artificial mounds made by erecting brick walls of great strength in a circular form, about 3 feet high and 12 feet across, the space being filled with soil, the tree set in the centre. These brick tubs were coated with plaster and ornamented with various figures, either in relief or fresco, which rendered them great objects of attraction.

Today we might edit this account and point out that the trees had nothing to do with black pepper. (The name was derived from the odor of the crushed flowers. Also the fruit is similar in size and shape to that of the peppercorn). The brick walls described here were doubtless adobe bricks used to make the tubs. The drinking fountain at San Luis Rey today gives us a hint as to the sort of decoration used in Mission days. The several bushels of pepper mentioned referred to the pepper berries and proves that female trees as well as male trees were included in the early mission planting because the pepper is dioecious, and there must be both male and female trees present for berries to mature. In 1935, the writer visited the Mission and was told that the one tree in the Mission patio was one of the original trees. However, all such stories are likely to be fanciful. If a tree growing there in 1858

*We are indebted to Mr. Charles Gibbs Adams for this legendary account of the pepper tree's introduction into California:

> When San Luis Rey was being built in 1787, the Captain of a sailing vessel from Spain, docking his ship at San Diego, rode mule-back to the Mission to visit his friend, the *Padre Principal*. They had been school chums as small boys in Spain. Over an evening glass of wine, the Captain related that, pausing in Peru on the way, they had strayed into the country and found trees with growth like a fountain, leaves like ferns, and pendant branches dripping with rose-colored berries.
>
> The *Padre* begged that the Captain bring some seed on the next season's trip, which is said to have been accomplished the following year. The peppers sprouted and flourished and became the parents and grandparents of all the pepper trees that so beautify California and Arizona today.

had a trunk diameter of 15 inches, it was probably not a very old tree since these peppers grow fast in a good climate with adequate water supply.

Seeds of the pepper tree were found in adobe bricks from Mission Soledad by the late Professor Henry. This Mission was founded about 1792, but we are not sure about how the seeds got into the adobe bricks or when. We can say this was some time after the founding of the Mission and perhaps not later than 1830.

It was not long before the pepper tree was planted in the more northern Mission gardens, as far north as Mission Santa Clara. A report that the pepper tree was injured by low winter temperatures at Mission San Juan Capistrano tends to indicate that the tree was common at most of the early Missions in Southern California. By the time the first Americans began to arrive in Los Angeles, the pepper tree had been propagated and was widely available, being distributed by men like Matthew Keller.

Matthew (Don Mateo) Keller had his vineyard northwest of the Wolfskill place in early Los Angeles. His shop was on the northwest corner of Los Angeles and Commercial Streets during the 1850's. In 1858 Don Mateo had 1,500 young pepper seedlings at his nursery along with many young fruit trees. The peppers were soon planted on outlying rancho sites, e.g. the Chino Rancho where the George Junior Republic was built in later years). Evidence shows that the pepper tree was grown as far north as San Francisco Bay during the early part of the 1850 decade.

Early settlers of Tustin will remember the Stevens place. The old pepper tree in front of the property with a d. b. h. measurement of 6½ feet is about the maximum reported to date. However, there are still many fine plantings along streets and highways in Southern California, such as, along north Central Avenue in Chino; Euclid Avenue in Ontario; and along old Anaheim Road east of Long Beach; as well as many a fine specimen in dooryards of early homes. Most of the older trees were planted during the 1870's and 1880's. Formerly much more abundant than at present, many of the old trees have been destroyed because of harboring black scale or other pests.

Pepper trees tolerate much drought, and resist frost down to about 10°F. when mature—less severe temperature when young and tender. Mourning doves at Santa Anita build their crude nests in the generous crotches of these trees. The berries are often sold for ornamental purposes. They are trees with some faults as well as assets: often they are considered a nuisance when planted near sidewalks on which the berries drop, and complaint is made that few other plants will grow near pepper trees. But in spite of these few faults, *Schinus molle* has its place in the landscaping pattern of parks and large gardens. As in the case of human friends, we know their shortcomings but like them anyway.

Our cover illustration of the California pepper tree, *Schinus molle*, was drawn by the noted illustrator, Charles Broughton (1864-1945). The original is among those of the Charles and Josephine Broughton Memorial Collection of Flower Paintings and Plant Illustrations at the Los Angeles State and County Arboretum.

PLANNING PHILOSOPHY AND THE ARBORETUM

HARRY SIMS BENT

An Arboretum through its special functions is set far apart from the common category of parks. In addition to the spectacular function of creating displays of living plants, an Arboretum must provide for the important purposes of organized scientific and educational activities. An Arboretum assumes an institutional character not found or expected in ordinary parks.

Under the democratic tradition the park idea has grown to be a significant expression of the proposition "for the People". Parks are the physical media through which society can mark many of its high aspirations for the common good. For one reason or another, many parks fail to accomplish that end.

The face of a city or of a region may shape up, for better or worse, largely through circumstances; but a good park does not happen by accident. Nature of course lends a hand but deliberate effort, artfully applied, is required if a good park is to be created.

The starting point is valid purpose, linked sensibly with the locale in question. Political patterns often contrive to invalidate that purpose and many communities end up with a collection of ineffectual

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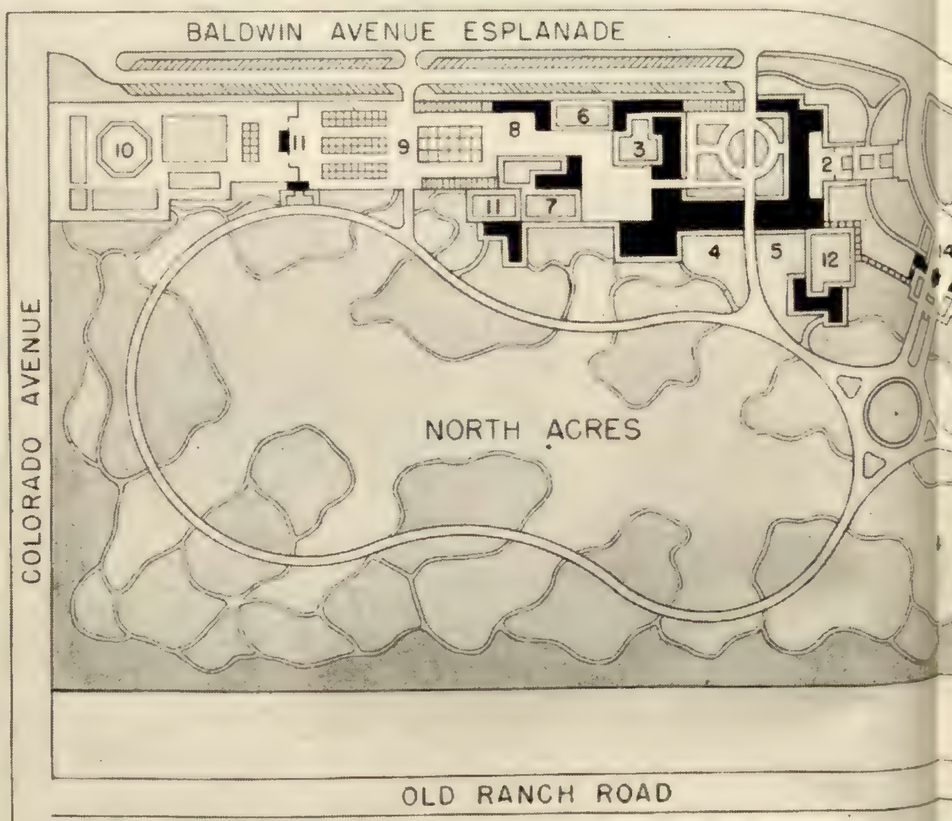

LEGEND: THE ARBORETUM ESTABLISHMENT CONSISTS OF (2) ADMINISTRATIVE OFFICES (3) SCIENTIFIC LABORATORIES (4) LECTURE AND EXHIBIT HALLS (5) LIBRARY AND HERBARIUM (6) DORMITORY FOR RESIDENCE SCHOLARS (7) GARDEN SCHOOL (8) SERVICE PLANT (9) GLASS AND LATH HOUSE UNITS (10) AREA FOR EXPERIMENTAL WORK (11) STAFF QUARTERS (12) GUEST HOUSE (14) PUBLIC GATE LODGE (15) PUBLIC LUNCH AND TEA ROOM (16) TEMPORARY OFFICE BUILDING

THE HISTORICAL PRESERVE CONTAINS THE HUGO REID ADOBE - THE QUEEN ANNE COTTAGE - THE BALDWIN COACH BARN - THE MAIN LAGOON AND THE MALL AND HISTORICAL GARDENS

THE ARBORETUM LIES IN THE HEART OF OLD RANCHO SANTA ANITA - RENOWNED IN THE ANNALS OF EARLY CALIFORNIA AND CONTAINING HISTORICAL BUILDINGS TO BE RESTORED AND PRESERVED - THE GROUNDS WILL BE LANDSCAPED WITH LIVING PLANT DISPLAYS USING ADAPTABLE SPECIES INTRODUCED FROM MANY REGIONS OF THE WORLD - THE ARBORETUM PROGRAM CALLS FOR A COMPLETE ESTABLISHMENT DEDICATED TO THE BROAD ADVANCEMENT OF HORTICULTURAL SCIENCE - PRACTICE AND EDUCATION - AUTHORITY FOR THE CREATION AND OPERATION OF THE ARBORETUM IS VESTED IN THE TRUSTEES OF THE CALIFORNIA ARBORETUM FOUNDATION ENABLED BY GRANTS AND FUNDS FROM THE STATE OF CALIFORNIA - THE COUNTY OF LOS ANGELES AND PRIVATE SUBSCRIPTIONS AND GIFTS - CHARTED ABOVE IS A DIAGRAM OF THE MASTER PLAN OF THE ARBORETUM DESIGNED BY MR. HARRY SIMS BENT - ARCHITECT - SHOWING THE BASIC GROUND LAYOUT AND FUNCTIONAL FEATURES OF THE PROGRAM.

CALIFORNIA

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parks doomed to suffer indifference and eventual serious neglect.

The more progressive communities have found that the park idea, creatively applied, is a strong arm toward correcting civic impasses and blight; also that the planning precepts apply to the various corollary problems pertaining to highway design, group housing, and the reclamation of blighted districts. All of these concepts, equally, are phases of comprehensive community planning, and they lie at the crux of communal living. The concept of planned physics, esthetically formulated and applied in orderly steps, is the only path by which a city or a region can escape from the clumsy consequences of an involuntary growth. In the pattern of reclamation, a good park, whatever its type or valid purpose, is a vital element. On the other hand, communities confronted with the reclamation dilemma, while burdened with an accumulation of poor and meaningless parks, find their path of progress greatly impeded. Poor parks are worse than no parks, since they serve to conceal the need for good ones and create a wasteful drain on community finance. It is still the habit of many communities to evaluate their park system on a numerical basis, with slight concern for its qualitative or functional aspect.

In the United States almost all that is good in terms of park planning and practice stems from the great tradition established by the Olmsteads of Boston, toward the middle of the 19th century. That tradition in turn harked back to the earlier precepts of the "natural style" school of English landscape art. Both were in harmony with the rise of democratic feeling and represented a distinct departure from the aristocratic park idea of the earlier European schools.

The number of good parks, of all types and sizes, is increasing in the United States, thanks largely to the impetus and revival inspired by Robert Moses of New York. Beginning about two decades ago, his driving insight erased the post-Olmstead blight that had fallen on the park idea and on comprehensive community planning. Following his cue and the impressive demonstrations carried out under the Moses regime in New York City, the state of New York and in New Jersey, the cities of Philadelphia, Cleveland, Pittsburg, St. Louis, Detroit, Toledo and Chicago, have in turn installed similar comprehensive programs. It is clearly certain that other large cities and regions of the country will gradually follow suit.

The Los Angeles States and County Arboretum project is an example of a special and institutional type of park, dedicated to scientific, educational ends and adult interests. In view of the importance of horticulture to the regional life of Southern California, the valid function of this type of institution and undertaking in its locale is patently not debatable.

The functions and objectives of the Los Angeles State and County Arboretum have been carefully studied and formulated by a group of highly qualified specialists. The site — made available by the State and County — is adaptable to the long-range program for the Arboretum's development and, happily, the grounds enclose one of the few vestiges of the historical scene of early California.

The Master Plan that has been designed to express the Arboretum program in adapting its functions to the physics of the site and locale, is predominantly functional and informal in character. The chief focal point of the interior plan is around the central historical and lagoon area — a physical fact that could not be ignored during planning toward a synthetic informality. To properly express the circumstantial role of history and science within the Arboretum's grounds, it was necessary to strike a balance which would preserve the old aspect of the site without prejudice to the paramount scientific aims of the adopted program. Under the Master Plan, now approved by the State, the County, and the Trustees of the Arboretum Foundation, it is believed that this conjunction of science and history is compatibly arranged. The development of the Arboretum proper, and the restoration program under the direction of the Historical Committee, can proceed concurrently with joint benefit.

Creative objectives of a Master Plan are bound to impose changes upon the status-quo of any site. In this instance, the changes are being made gradually and with minimum disturbance to the fragments of the valued past that belong to the original site. An Arboretum cannot be created overnight. It is hoped that with proper financial support, and a systematic advance in construction and planting from year to year, a term of seven years will produce an effective semblance of the Arboretum dream. A more finished pattern of creative planting displays will in many respects take much longer. Friends and sponsors of the Arboretum may expect that at its maturity it will take its place among the great institutions of the world. A further distinction that will set it at a high level of valued significance is the fact that it will be a restored shrine of historical importance to the State of California. Thus through foresight, planning, and investment, the people of Los Angeles County may create an invaluable annuity to bestow upon their children.

GROWING NOTES

GEORGE H. SPALDING

AUSTRALIAN PLANTS

In the first of this series of Growing Notes, we referred to the vast store of plants from the "land down under" which could add to the beauty of Southern California gardens. Before we go into a discussion of plants new to us, let's take a look at some of the larger genera which are already represented in this area.

Acacias are well known and a fair number of species are widely grown in the Southland, most of them large shrubs or small trees. Few people know that there are lower-growing acacias which are small shrubs, reaching a height of only three to six feet. Included in this group are *A. brownii, A. buxifolia, A. drummondii,, A. nervosa*, and others. There are also some really large trees of which *A. elata* is one of the finest. An excellent mature specimen of this tree may be seen in the yard of the residence on the northeast corner of Allen Avenue and Lombardy Road in Pasadena. To the best of our knowledge, the dwarf group and the very tall (i.e. over 50 ft.) group, are unknown in Southern California, except to a few hobbyists.

Our experience in germinating and growing these plants during the past year indicates that they offer no greater difficulties than the more commonly grown species. However, it must be kept in mind, that none of these young plants have gone through a cold winter, so their hardiness is still undetermined. Also, it will take time to determine their length of life. Test plantings of more than fifteen new species have been made at the Arboretum between the middle and end of October of this year, and at this writing, December 15th, all are thriving. They have been planted in a western exposure which is windy, and where the soil is heavy. This should give us a good test of both hardiness and wind resistance.

In addition to their garden value, Acacias are in considerable demand as cut flowers. Several species are used, but *A. baileyana* is the most popular with florists, and the only one grown in any quantity commercially. Does it not seem reasonable that from the many species as yet untried, others equally desirable as cut flowers may be found?

Every Southern Californian knows *Eucalyptus globulus*, the Blue Gum. Few people know that it is a native of Tasmania, and not at all widely grown in Australia. The ease with which it has become established here would lead to the belief that probably many more of the several hundred species known to exist would do as well. Some of them are being grown to quite an extent. *E. ficifolia*, one of the most brilliantly flowered, is very well known in areas not subject to consistently freezing winters. *E. leucoxylon rosea* is a fine street tree with smooth white bark and pink flowers which distinguish it from *E. sideroxylon pallens*, (better known as *E. sideroxylon rosea*), an equally fine but somewhat larger tree with rough, dark, deeply furrowed bark. Both have narrow leaves; those of *E. leucoxylon rosea* are green, those of *E. sideroxylon pallens*, are gray.

There are other large tree Eucalypts now being grown, such as, *E. citriodora, E. camaldulensis*, (known in the trade as *E. rostrata*), and *E. corynocalyx*, to mention a few. These large-growing trees are not well suited to smaller gardens, so while we are not neglecting the larger types, we are trying to grow and test as many of the "Mallee", or shrubby types, as possible. Already being offered in some of our nurseries are *E. forrestiana*, which grows to twelve feet and can be used either as a large hedge plant or small tree. The flowers are small and yellow, followed by showy red seed pods. This Eucalypt will probably need some protection when young, but is quite hardy when well established. *E. macrocarpa* and *E. preissiana* can now be obtained in a few of our nurseries. Both are somewhat straggly shrubs to fifteen feet, but their lack in form is more than made up for by their flowers. *E. macrocarpa* has probably the largest and most beautiful flowers of any Eucalypt, ranging in color from light pink to bright red and up to five inches across. *E. preissiana* has slightly smaller flowers of bright yellow. From observation of the young plants grown at the Arboretum, it appears that both may have possibilities as espalier subjects. Both of them will probably be tender, at least while young.

We are growing approximately fifty species of *Eucalyptus* at the Arboretum at the moment; most of them not at present available in this country. Very little is known of most of them. The coming winter should give us valuable information as to their hardiness in the younger stages. The literature is being combed for records of previous trials in California, and records are being kept of their behaviour with us.

As a rule, the Australian plants now available in our nurseries are listed under their scientfic names. Of these, *Acacia* and *Eucalyptus* have become well known and are used by everyone. From this point on, the average home gardener begins to bog

down in such names as *Chamaelaucium*, *Hymenosporum*, etc. Therefore, it seems logical to use common names where such names are in good usage in other countries. Australian author, Ernest E. Lord, in his "Shrubs and Trees for Australian Gardens", published in 1949, has made a serious attempt to standardize common names for plants in that county. This is the first comprehensive reference work, published in Australia, describing the native flora in understandable, yet very accurate detail. Careful study of this book leads to the opinion that he has done a good job, and common names therein used will be cited in *Growing Notes*.

A third group of Australian plants which is well known to us is the Bottlebrushes. This common name rightfully belongs to the genus *Callistemon*, although it has been used for some of the Melaleucas. The bottlebrushes are widely grown in Southern California, and should be, as they are hardy and wind resistant. When several species are planted together, it is possible to have bloom over a large part of the year. The species most commonly grown, *C. citrinus*, and *C. viminalis*, have red "brushes" although occasionally one of the cream-flowered species, *C. salignus*, is seen. The Arboretum has been very fortunate in receiving seed of several species with lilac or violet flowers, and one, at present unidentified, is a species having pink flowers.

SOUTHERN CALIFORNIA HORTICULTURAL INSTITUTE

JOHN S. VOSBURG

The Los Angeles Chamber of Commerce in 1936 found itself with funds available to devote to the advancement of horticulture. However, no authorized organization existed where such funds might be used properly. A call was put out to the horticultural leaders of the region to consider this problem and take action.

The motivating group was small at first, consisting of such men as Manfred Meyberg, Roy Wilcox, Lovell Swisher, Hugh Evans, and Richard Westcott. As the problem grew so did the willing hands that could cope with it. From their efforts came the Southern California Horticultural Institute, a non-profit organization.

Believing that Southern California can be the most beautiful spot on earth, the objectives of the Institute became:

1. To conduct region-wide street planting, and a beautification program to include the planting of proper trees in the proper place.
2. To conduct Flower Shows: the second California International Flower Show is to be held this spring.
3. To motivate the establishment of Arboreta and Botanical Gardens: The Los Angeles State and County Arboretum is now rapidly progressing as a result of this objective.
4. To disseminate horticultural information for the benefit and education of those interested in horticulture, both scientific and practical.
5. To stimulate the cooperation of all organized horticultural groups, in order to make Southern California "the most beautiful spot on earth".
6. To establish a garden center with suitable location, and a building in which all local horticultural groups may hold flower shows and organizational meetings.

Meetings:
The first Monday of each month.

Time and Place:
7:30 p.m. Gibson Hall, the Friday Morning Club, 940 South Figueroa St., Los Angeles.

Executive Headquarters:
7848 Denivelle Road, Sunland, California
Telephone: FLorida 3-6280

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NOTE:
LASCA LEAVES will attempt to include a systematic coverage of all horticultural organizations and societies in the Los Angeles area.

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Annual Associate Membership	$ 5.00
Annual Membership	10.00
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Annual Sustaining Membership	100.00
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CLUB MEMBERSHIPS are available, at any amount,
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Check should be made payable to the California Arboretum Foundation, Inc., and sent to our headquarters at 301 North Old Ranch Road, Arcadia, Calif. Phone DOuglas 7-1161.

The Los Angeles State and County Arboretum is operated by California Arboretum Foundation, Inc., a non-profit corporation. The Foundation is developing and managing the Arboretum under an agreement with the Los Angeles County Board of Supervisors. Title to the 127 acres of property is to the State of California, which has leased it to Los Angeles County for fifty years.

Construction operations are subject to continued by the County of Los Angeles in accordance with the master plan of the foundation prepared by Pierce Shea Dean. Because of safety hazards the Arboretum is closed to the public during construction.

Operated By

California Arboretum Foundation, Inc.

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LASCA LEAVES

Quarterly Journal of the

LOS ANGELES COUNTY STATE *and* ARBORETUM

A CALIFORNIA ARBORETUM FOUNDATION, INC. PUBLICATION

R. J. SEIBERT, *Editor*

VOL. I APRIL, 1951 No. 3

TO MAKE OUR LAND MORE BEAUTIFUL

JOHN ANSON FORD

(SUPERVISOR, LOS ANGELES COUNTY)

The beginnings of an institution, or project, are relatively unimportant except as they may help more clearly to define the nature of the undertaking and measure its progress.

I recall with gratification the remarks made to me three or four years ago by Dr. Samuel Ayres, Jr., regarding the unrealized opportunities possessed by Southern California, and Los Angeles County in particular, having to do with a more diversified horticulture. Particularly do I remember Dr. Ayres' eloquent emphasis on the advantages, both aesthetic and commercial, that our region might realize by the cultivation of more varieties of flowering trees and shrubs. His own charming La Cañada estate of three acres and his beautiful collection of colored slides started my mind searching for some practical implementation of this idea. I knew that Dr. Ayres was not alone in being aware of our unrealized opportunities.

How could the government of our great Los Angeles County properly participate in this intriguing project? I proposed to Dr. Ayres that some government-citizen relationship be set up, similar to that which obtains with respect to the Hollywood Bowl. That wonderful County-owned property is under a long term lease to a non-profit association, composed of citizens of musical taste and interests, who desire to enrich our community life with more and better music by making it available at low cost to the rank and file. I had seen that cultural experiment pioneered from small beginnings to world-wide recognition. I told Dr. Ayres and other horticulturists with whom he consulted that a similar pattern might be employed in establishing an arboretum.

As a result of many conferences and luncheons with horticulturists at the Mayfair Hotel, a corporation was finally set up known as the California Arboretum Foundation, Inc.

The search for a suitable property where the joint interests of the County and the Foundation could be satisfactorily served took many months. The search drew to a close when the purchase of the "Lucky" Baldwin property was recommended. I employed my best powers of persuasion, direct and indirect, to generate interest on the part of my colleagues. This bore fruit in mounting enthusiasm, in which the former supervisor, William A. Smith shared, he having a background of forestry training and being further interested because the proposed arboretum (a designation agreed on by common consent) was located in the supervisorial district he represented. With interest evident on the part of the Board of Supervisors, the support of the California Division of Beaches and Parks was enlisted. Thus began a joint state and county investment whose total now approximates $400,000.

There are many things that government cannot do well and economically. As far as the County is concerned the operation of an arboretum is one of them. It is of interest to point out that Los Angeles County is following a plan of joint effort by officials cooperating with private citizens in other fields. The County Museum and the County Art Institute profit richly by voluntary citizen organizations which exert an important influence in their respective fields. At the great Los Angeles County General Hospital basic medical policies are determined, not by the county's paid staff, but by the visiting staff of non-paid physicians who voluntarily give a portion of their time to the institution.

In the fields of community advertising for tourists and the promotion of expanding commerce and industry, several millions of dollars of taxpayers' money has been spent in the past twenty years for the supervisors, not at their own discretion and direction primarily, but in accord with programs advanced by two contract agencies, viz. the All-Year Club and the Los Angeles Chamber of Commerce, respectively.

The genius of the Los Angeles State and County Arboretum is that public and private resources have been joined for the common good, on a non-profit basis. The objective of a broader and richer horticultural development for Southern California is being so effectively implemented on this beautiful one-hundred-and-twenty acre tract that every house and garden in the county can benefit. Yes, life will become more beautiful, as well as more profitable, in Southern California because of the arboretum's program.

The arboretum is a park, *plus*. Here is set aside an area where persons of all ages can relax, enjoy themselves, and learn a great deal about plants which may be grown in the Los Angeles area. Of special interest is the historically significant Hugo Reid Adobe residence and the casino and stables of the colorful and unconventional "Lucky" Baldwin. Each of these structures, now being restored by generous private contributions, is vividly illustrative of life in Southern California's earlier history.

The horticultural program occupying the larger proportion of the one-hundred-twenty acres, and drawing on the funds of both the County and the Foundation for its development, promises immeasurable enrichment for Southern California. Here new and wonderful plants will be imported and tested. Highways and gardens alike will reflect the work of the arboretum through the introduction of rare specimens.

The bringing of water to this region by giant aqueducts called for engineering feats of unmatched skill. It made our desert and semi-desert areas blossom as a rose. Our agriculture, following standard patterns of irrigation, began to expand a hundred-fold because of the courage and foresight of Mulholland and the "dreamers" who with him brought us those artificial rivers of water. Industry has followed in the wake of agriculture. All about us has risen evidence of a vast man-made empire.

In this marvelous setting, as the years go by, the Los Angeles State and County Arboretum is destined to bring new beauty of infinite variety. The Arboretum is helping Southern California come into its own.

EUCALYPTUS GLOBULUS

CHARLES GIBBS ADAMS — LANDSCAPE ARCHITECT

The Titan-like specimens of *Eucalyptus globulus* which tower above most of the other trees on Rancho Santa Anita at the present time, arrived in 1863 in the form of seed — the first supply ever to reach southern California. Some of this seed went to ranches owned by the old Verdugo and Sanchez families, on land which is now the city of Glendale. Other portions went to the Bannings of old Wilmington, to the Workmans of San Fernando, and to Señor Carrion in the San Dimas hills.

Seven years before this happened, when the gold rush was still current, a few of the seeds apparently had found their way to upper California, where in 1856 the little pioneer Shellmound Nursery of Oakland came into possession of some of them. According to record, they sold seedlings for five dollars apiece. (Seedlings of similar size today would sell for about thirty-five cents.) There is no record of the existence of any of these seedlings now. But there is record that some of the seed was planted in Mendocino County —too far north for their comfort.

The significant arrival of this seed, in 1863, and its fairly wide distribution which resulted in more extensive plantings of the "Tasmanian Blue Gum," — as it is known in Australia, — than any other non-fruiting tree at the time, was due to the vision of a Methodist Bishop, William Taylor of San Francisco who had gone to Australia on missionary work. From there he had sent his wife some seed of this giant tree which had so impressed him. Well might he have been impressed with specimens considered by authorities to be the fastest-growing tree on earth, second only to the Sequoia in size! The Bishop's wife planted them in San Francisco and across the Bay in Alameda, where they prospered

Photo: Courtesy L. A. County Board of Supervisors

Huge *Eucalyptus globulus* trees shade the "Lucky" Baldwin lakeside Casino.
(Queen Anne Cottage)

so well that the Federal Government took notice, imported more seed, and distributed it from Washington to southern California, a more friendly environment for its best development.

The magnificent specimens that have survived on the grounds of Rancho Santa Anita for eighty-eight years were planted by William Wolfskill: this is a matter of record in the possession of his descendents. A few years after the event of this planting, the new owner of the land, E. J. "Lucky" Baldwin—the "Forty-niner" from Sacramento and San Francisco — built his fantastic lakeside Casino, and his stables, in the quick-developing shade of the trees. Soon "Lucky" was in possession of a wealth of seedlings — hundreds of them. With a vision that can now be appreciated, although at the time his idea was considered somewhat in the nature of an extravagant joke, he planted out rows of these seedlings, from the north end of the Ranch just below the base of the Sierra Madre range through wild, empty, and untenanted fields almost to the town of El Monte. Santa Anita Avenue, alias "Doubledrive" is the result; many of the seedlings of those early days are now towering monarchs which shade the homes and gardens crowding the highway of Baldwin's dream.

Further picturesque history attended the arrival of the famed Eucalyptus seed in this part of the world almost a century ago: when a flat of seedlings reached the ranch of Señor Carrion for distribution among the ranchers in Pomona Valley, his little girl Rosa — now the only surviving one of a bevy of daughters — stole two of the seedlings of 1863, and planted them among rank weeds below a bank near their adobe ranch house. When her mother discovered Rosa carrying water to her treasured seedlings, she exclaimed, "What will your father do when he learns what you have stolen?"

"It will be too late, mama, when he does, for I shall tend them so lovingly that they will be too large to move when they lift their heads above the weeds."

Today, toward the sunset of Rosa's life, those trees stand guard over the old adobe. One grew straight and towering, according to legend, in honor of the little one's love of beauty. The other grew bent and crooked as a warning to all thieves.

Over the years, Californians have grown about two hundred different species of Eucalypti. Some have been used for precious fuel; some for windbreaks in citrus

orchards; some for the gorgeous color of their blossoms; and still others for the beautiful silvery foliage. On Rancho Santa Anita, almost any day at midday, crows may be seen in goodly numbers, taking their rest among the towering tops of the Eucalyptus trees — these highest lookouts on a ranch which has become the Los Angeles State and County Arboretum.

With regret we must note that many of these original trees are nearing the end of their life span in Southern California. However, their progeny will carry on as a reminder that foreign plants as well as foreign peoples have found a welcome here.

NOTE: The cover illustration shows *Eucalyptus globulus*, var. *compacta* in its proper use as a low windbreak and masking hedge. This "dwarf Blue Gum," a horticultural variety is said to have originated near Niles, California, from seed of the normal-sized "Tasmanian Blue Gum." The "dwarf" is a small tree to thirty feet, symmetrically branched from the base. Its gray juvenile foliage remains conspicuously on the lower branches, contrasting pleasantly with the greener adult foliage of the upper branches. Seed from the drawf type will produce an average sixty to seventy per cent of *compacta* seedlings which may easily be distinguished from the normal form of the species, within the first year of growth.

DAYLILY TEST GARDEN AT LASCA

W. QUINN BUCK

Those who are interested in daylilies will be pleased to know that the first of the test gardens to be set up at the Los Angeles State and County Arboretum will be of *Hemerocallis*. This garden will cooperate with both *The Hemerocallis Society* and *The American Plant Life Society;* the latter organization will list it as an official cooperative trial garden replacing the one formerly at the University of California at Los Angeles.

For its beginning the daylily test garden will have over two hundred named varieties, most of the species, and a great many of the writer's own seedlings. Temporarily, all of these are planted just south of the present lath house; later, when the permanent test garden area is ready for use, they will be moved there and planted in color groups.

The daylily test garden is being planned so that it will show as many of the varieties as possible, not only the newer ones but also the older ones, so that our visitors can see the progress being made by daylily breeders and can make comparisons of varieties as to adaptability, performance, and quality.

Much of the breeding at the Arboretum will be with the writer's colchicine-induced polyploids, to explore their possibilities and limitations.

LASCA TEMPERATURE

R. J. SEIBERT

Every plant grower of Southern California is vitally interested in temperatures and their effect on the exotic plants grown in this region. With the occurrence of hard frosts during two previous winter seasons, the Arboretum is fortunate in having placed and recorded data from seven maximum-minimum thermometer stations for critical observations at well spaced points covering the Arboretum grounds. These thermometers were set up and recordings started during December, 1948. The accompanying chart summarizes monthly average minimum and maximum temperatures from January, 1949, to December, 1950, for each station. Also listed are the lowest and highest temperatures recorded each month at each station.

Topographic position under natural outdoor conditions plays an important roll in temperature variations within a very limited site such as the Arboretum grounds. The difference in elevation from lowest to highest points is about 108 feet, i.e., between 486 and 594 feet above sea level. In general, the lowest unprotected places are subject to the coldest temperatures. Our coldest recorded temperature was 21° on the night of January 4, 1949, occurring in the Mall area north of the Coach Barn, in a low situation. The same night, the recording on top of Tallac Knoll was 24°. At a low point between the Queen Anne Cottage and the lake, the temperature this same night was 24°. However, a moderating effect of the lake no doubt accounted for the higher temperature at this particular low point.

From our present figures one can seldom expect less than a 2° variation between the highest and lowest minimum station recording. Of more significance is the fact that we can expect 7° minimum temperature variation ranges between different parts of the Arboretum grounds on critical nights.

NOTE: Lowest temperature to date recorded in 1951 occurred the night of February 28 with a reading of 28°.

TEMPERATURE RECORDS — LASCA

		STATIONS —1—				—2—				—3—				—4—				STATIONS —5—				—6—				—7—			
		AVERAGE		PEAKS		AVERAGE		PEAKS		AVERAGE		PEAKS		AVERAGE		PEAKS		AVERAGE		PEAKS		AVERAGE		PEAKS		AVERAGE		PEAKS	
MONTH	YEAR	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.
JAN.	1949	34.64	53.66	24	66	33.16	54.41	21	65	35.54	54.16	23	67	35.35	54.48	24	67	33.38	54.60	21	66	33.54	54.32	22	66	33.32	54.19	22	64
	1950	37.06	58.09	29	73	35.12	58.93	26	76	38.51	57.22	30	73	38.35	58.58	26	76	34.90	58.80	26	80	35.29	58.12	26	74	35.06	57.96	26	74
FEB.	1949	39.03	60.35	28	77	38.03	62.39	27	79	40.21	59.92	30	77	39.42	60.96	30	77	37.85	62.75	27	78	37.89	60.46	27	75	38.03	61.39	27	75
	1950	44.00	65.39	32	76	42.82	67.60	31	79	44.85	64.60	33	78	45.10	66.75	33	78	42.21	70.92	30	84	42.32	65.28	30	75	42.14	66.03	30	75
MAR.	1949	42.48	64.93	37	76	41.19	68.83	35	76	42.64	65.41	37	72	42.80	66.00	37	73	40.32	68.74	35	77	40.64	64.90	35	72	40.83	66.29	35	74
	1950	45.45	68.29	37	82	43.96	70.71	35	83	45.64	68.03	39	83	46.00	70.51	39	86	42.35	74.38	34	92	42.90	69.25	34	85	42.80	70.54	35	87
APR.	1949	49.73	75.80	40	92	48.26	77.30	35	92	50.06	77.33	40	95	50.00	77.23	40	91	46.90	78.50	36	94	47.66	75.76	37	89	48.10	77.16	40	91
	1950	50.43	72.73	40	89	47.23	74.84	38	90	50.36	73.06	40	89	50.26	74.93	40	90	47.16	78.50	36	96	47.96	73.16	37	88	47.70	73.46	36	89
MAY	1949	52.16	76.03	45	97	51.29	76.64	44	97	52.51	78.93	44	108	52.19	79.48	44	104	49.87	80.22	42	104	50.74	77.12	43	102	50.61	79.87	43	102
	1950	51.35	72.51	41	86	49.67	73.40	39	86	51.83	74.51	43	88	51.93	75.51	43	92	48.35	79.45	36	95	49.32	74.58	38	86	48.77	77.00	37	90
JUNE	1949	57.36	84.30	48	101	55.66	84.40	46	100	57.30	86.93	48	103	57.33	89.43	48	105	54.70	89.43	45	108	55.70	86.36	45	102	55.80	88.93	45	104
	1950	54.72	80.70	44	97	53.03	76.30	42	81	55.17	85.06	44	102	55.37	85.53	44	103	51.31	88.53	42	108	52.96	85.13	44	102	52.44	88.06	43	106
JULY	1949	58.19	87.40	52	97	57.09	86.70	51	95	58.51	88.16	53	100	58.13	91.06	53	101	56.12	90.90	52	102	56.87	89.22	52	95	57.03	90.87	51	100
	1950	62.48	87.36	58	94	60.71	88.00	55	?	62.84	91.23	58	100	62.74	91.77	58	100	59.12	94.97	53	103	60.41	90.52	56	99	60.16	93.97	55	103
AUG	1949	58.16	90.25	50	101	57.41	89.93	50	100	58.90	90.36	50	100	58.96	92.51	50	102	57.48	92.71	50	102	57.51	90.25	50	98	57.45	92.03	48	100
	1950	57.39	87.65	50	96	55.65	88.93	49	96	58.58	90.39	52	100	58.45	91.00	53	100	53.90	95.32	46	109	55.19	88.97	48	98	54.81	92.03	47	104
SEPT.	1949	57.06	86.53	50	100	55.16	91.16	47	105	57.83	89.76	51	107	57.46	91.80	50	108	54.90	93.15	50	109	55.50	88.40	48	103	55.00	90.66	47	104
	1950	57.90	78.73	51	94	56.07	82.00	49	96	59.07	80.67	52	98	58.87	79.60	52	99	55.00	87.26	48	100	56.47	80.53	51	96	57.63	82.83	49	98
OCT.	1949	50.09	76.76	38	91	48.45	79.67	36	95	51.51	78.51	39	95	51.38	79.93	38	96	48.41	80.34	36	97	49.09	77.74	37	92	48.58	79.25	35	93
	1950	55.16	81.42	48	100	53.42	84.27	47	100	57.06	82.74	51	106	56.79	85.82	50	108	52.97	89.58	47	111	53.06	82.74	47	102	52.97	83.97	46	104
NOV.	1949	49.46	76.90	43	91	48.03	79.20	42	94	53.20	78.83	44	94	53.13	79.03	44	96	48.36	82.40	41	98	49.13	78.20	42	93	49.23	77.83	41	92
	1950	48.73	72.13	40	90	47.03	73.50	34	94	50.73	71.97	41	92	49.66	76.59	40	92	46.93	77.50	36	98	47.43	77.31	32	90	46.77	72.87	34	91
DEC.	1949	40.00	63.61	31	77	38.22	64.54	27	79	42.12	64.48	31	79	42.09	65.64	31	81	38.03	67.12	27	83	38.83	64.35	27	79	38.73	63.67	26	77
	1950	47.32	70.45	39	83	45.09	71.76	36	85	49.39	70.42	40	80	47.55	71.00	38	84	44.90	73.58	35	87	?	?	?	?	45.16	70.84	35	81

Temperatures in degrees Farenheit

"I RECALL . . ."

HUGH EVANS

For many years, indeed long before I engaged in the nursery business, I expended time, effort, and research in procuring from abroad new or unusual plants possessing merit, so that our gardens and streets thereby might be more adorned.

Looking over my old lists of plants, of things obtained mostly from Australia and South Africa, I am almost daunted as I read them. Virtually all of this material came here as seeds, and much of it from countries which had a definite prolonged dry season, similar to our own Southern California. Unhappily, many of these plants which I raised to the flowering stage from seed, no longer exist. Most of them I did not propagate in any quantity and when I left my old garden, many of them perished, and those which found homes in various gardens received perpetual irrigation, a treatment to which they sooner or later succumbed.

Scrutinizing catalogues and horticultural books of the two countries mentioned above, and admiring the illustrations of the various subjects, I experience a distinct sense of loss and dismay when I realize how many of these beautiful and interesting plants have passed entirely from my ken, and I fervently hope that in the new State and County Arboretum, all these subjects which require and must have the right environment and treatment can be made happy and will flourish and cause pleasure to all who behold them. It is true, too, that whereas so many plants from North and South Africa and from West Australia especially, dwindled and passed way for lack of rest; on the other hand, a number of subjects from the moisture-laden regions of New Zealand and Chile for instance perish with us here in Southern California for lack of atmospheric humidity while around the Bay region in northern California they grow and thrive.

It is easy, too easy sometimes, to put moisture into the ground, but without taking pains and installing overhead piping systems to cast a fine misty spray to combat our atmospheric aridity, many beautiful things which insist on moisture-laden air cannot be successfully grown here, though where there are trees which do not cast too dense a shade and at the same time throw off moisture into the air, these adverse conditions can be to a large extent obviated.

From where I am sitting, writing at my desk, I look out at a bush of *Luculia gratissima* from China; this shrub is about fifteen years old and carries about fifty large trusses of its lovely waxy pink fragrant flowers. The chief reason I mention this, aside from its natural charm, is because this particular plant seems to defy all rules; it is in the main a difficult and capricious subject, yet this specimen has been growing all these years in the hardest, most intractable and badly drained soil it is possible to imagine. Some years ago we grew hundreds of this lovely shrub; they received every attention — various types of soil were tried; but unfortunately "When we learned to know them well, and love them, they were sure to die." I recall, we got all the scientists and horticulturists in the countryside to prescribe for them, but alas, nothing would avail: up to about a year or more old they seemed to rejoice in life, and then some obscure malady carried them off.

About four years ago, when I was in Oakland, my friend, Dr. Harry Shepherd, of the University at Berkeley, took me to his garden in Berkeley to see a *Luculia* which he said I had given him about ten years previously. I think I never saw a more entrancing thing: it had over three hundred trusses of flowers, and the plant was in magnificent health. A year or two later, Dr. Shepherd told me he could not begin to count the flower clusters. We are growing this superb plant all over again, and hope from past disaster to pluck final success.

Aside from the material secured from Africa, Australia and New Zealand, I naturally procured quite a few meritorious subjects from China and India, the Canary Islands, and Central and South America, and quite a number of exotic plants from England. Hillier & Sons, a very old firm at Winchester, used to and still do grow quite an assortment of rare and uncommon flowering shrubs, and I obtained many fine things from this source.

I remember vividly how many years ago the late Sir Arthur Hill, Director of Kew Gardens, was rambling with me around my garden and noticed some unusual items I had received from England. He asked me from whom they came; I told him (it was not Hilliers) and he remarked, "I think he lifted them from Kew; he is a very enterprising man. When

he comes to Kew we delegate one man to walk in front of him, and another to keep right behind him, and he gets away with plants in spite of that." I regret to say that both Sir Arthur Hill and the nurseryman in question have gone to a better land. It was Sir Arthur Hill, incidentally, who sent me seed of *Ceratostigma Wilmottianum* which up to that time was not in Southern California. Given plenty of water during the summer, this is a valuable plant with its profusion of blue flowers for month after month.

In this connection, no one has any business experimenting with new plants unless together with the joys of realizations, he is also steeled to endure the pain of disillusionment. He will only too often stand over some distressful subjects and in imagination hear them cry like the gladiators of old in the Roman arena—

"We who are about to die salute thee."

In another article I hope to mention and pay tribute to the men and women who did so much to enrich our state by their introductions.

LASCA, AND ITS BIRD-LIFE

W. DAN QUATTLEBAUM

In the area now known as LASCA—Los Angeles State and County Arboretum—there has been, very probably for thousands of years, a small lake maintained by perennial springs from which flowed a small brook. It was the site of an Indian village, and the Indian name for the place was "A-hupquing-na"—Place of Waters. With very fertile soil and ample moisture, the area around and near the lake and springs undoubtedly produced a veritable jungle of Alder, Willow, Sycamore, Walnut, Toyon, Coffee-berry, Creek Dogwood and Wild Grape. Scattered there also were the Live Oak, Mesa Oak, Sumac, Elderberry, Baccharis and Squaw-bush, on Tallac Knoll and the mesa.

Such favorable conditions for bird life continued without a break, perhaps, until much later, when after E. J. Baldwin had developed the place, there was a luxuriant stand of Eucalyptus, Cypress, Fan Palms, Eastern Elms, Persimmons and Magnolias. These almost ideal conditions — trees, shrubs, underbrush and water — made this area an attractive habitat for permanent as well as summer and winter residents of upland birds and water fowl. It was also a stopping place of natural attraction for migrants on their way to and from their summer homes in the mountains and North Country.

When the Arboretum Foundation took charge of the grounds in 1948, it was about the best spot in this section to see a good list of birds. "Birders," including myself, had haunted the place for several years. About 1940, the Burrowing Owl and the Roadrunner were still there. And about this time, one day in March, I saw a Summer Tanager, an exceedingly rare visitor from the East, in an eastern Oak near the Queen Ann Cottage. Two other "birders" saw a roaming Duck Hawk and a roving Cardinal. In 1947, a pair of Pied-billed Grebes raised two broods on the lake; and on December 23, the same year, they brought off the third brood of two young. These young survived a severe winter and grew to maturity. The summer of 1949, the Caretaker who lived by the lake noticed the Green Heron and Black-crowned Night Heron nesting at the same time, in his yard. Two rare Florida Gallinules spent the fall and winter of 1949-50 on the lake.

I have compiled the records of the birds observed by local ornithologists in the area of the Arboretum, and to date the total is 156 species: of these 39 are residents, 11 summer residents, 20 winter residents, and 86 migrants.

The officers and councilors of the California Arboretum Foundation, Inc. are to be heartily commended for their action in setting apart the Arboretum as a Bird Sanctuary. The staff at the Arboretum is also very cooperative in the interest of bird-life on the grounds. Plans are afoot to grow special plants which are known to furnish food for birds. The art and work of developing a great Arboretum was well under way in June 1950. There have been many changes in removing trees, and otherwise preparing for new landscaping; more is coming, but the grounds and the lake—and the Arboretum—will always be a haven for birds.

GROWING NOTES

GEORGE H. SPALDING

A report on the germination periods of various species may be of interest for the record and of some help to those gardeners who like to try something a little different. Following is a germination table based on Arboretum records. All were germinated in the Georgia Peat and Sponge Rok mixture. Those given special treatment are indicated by symbols as follows: B—boiling water; F -fired; N—nicked. Germination period indicated is in days except where otherwise noted:

Species	*Treatment*	*Period*
Acacia acuminata	B	21
Acacia adenophora	B	6
Acacia aduncа	B	8-10
Acacia Brownii	B	8-10
Acacia buxifolia	B	10-14
Acacia cardiophylla	B	8-10
Acacia decora	B	14
Acacia difformis	B	25-30
Acacia Drummondii	B	30-35
Acacia elongata	B	14
Acacia falcata	B	20
Acacia farnesiana	B	7-10
Acacia linearis	B	21
Acacia nervosa	B	25-30
Acacia obliqua	B	25-30
Acacia oxycedrus	B	15
Acacia pendula	B	5
Acacia prominens	B	23
Acacia pycnantha	B	27
Acacia spectabilis	B	11
Acacia subulata	B	40
Acacia undulifolia	B	15
Acacia vestita	B	7
Alyogyne multifidus		14
Arthropodium cirrhatum		40
Aspalathus sarcodes		30
Banksia burdettii		60
Banksia ericifolia		30
Banksia Menziesii		40
Banksia prionotes		55
Bauhinia carronii	N	7
Beaufortia sparsa		26
Brachychiton acerifolia	N	12
Brachychiton lucida	N	12
Callistemon acuminata		6
Callistemon coccineus		18
Callistemon lanceolatus		6
Callistemon lilacinus		9
Callistemon pallidus		5
Callistemon pinifolius		12
Callistemon teretifolius		8
Callistemon viminalis		6
Callistemon violacea		10
Chamaelaucium rubrum		30-45
Chorizema Dicksonii		17
Entelea arborescens		11-150
Eucalyptus Burdettiana		13
Eucalyptus caesia		7
Eucalyptus calophylla rosea		7
Eucalyptus citriodora		7-10
Eucalyptus coccifera		24
Eucalyptus crucis		9
Eucalyptus erythrocorys		5
Eucalyptus erythronema		11
Eucalyptus erythronema Lairdi		13
Eucalyptus Forrestiana		8
Eucalyptus Gunnii		40
Eucalyptus Lehmannii		20
Eucalyptus leuxcoxylon rosea		7
Eucalyptus macrocarpa		5
Eucalyptus megacornuta		11
Eucalyptus miniata		26
Eucalyptus nutans		12-25
Eucalyptus Oldfieldii		13
Eucalyptus pachyphylla		9-15
Eucalyptus platypus		32
Eucalyptus Preissiana		10
Eucalyptus pyriformis		9
Eucalyptus rhodantha		7
Eucalyptus roseus		13
Eucalyptus Stoatei		38
Eucalyptus Tasmanica		8
Eucalyptus tereticornis		7
Grevillea Wilsonii	F	10-77
Hakea cyclocarpa		40-50
Hakea glabella		23
Hakea multilineata		35-50
Hakea ruscifolia		50
Hakea petiolaris		20-30
Isopogon roseus		4-5 mos.
Kennedya prostrata	B	13
Leschenaultia biloba		4 mos.
Melaleuca crassifolia		13
Melaleuca densa		13
Melaleuca elliptica		13
Melaleuca erubescens		13
Melaleuca longicoma		13
Melaleuca nodosa		20
Melaleuca pubescens		13
Melaleuca Steedmanii		10
Melaleuca striata		10
Melaleuca styphelioides		13
Melaleuca Wilsonii		29
Telopea oreades		24
Telopea speciosissima		14
Verticordia Muelleriana		4½ mos.
Verticordia plumosa		4 mos.
Viminaria denudata		17

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The Los Angeles State and County Arboretum is operated by California Arboretum Foundation, Inc., a non-profit corporation. The Foundation is developing and managing the Arboretum under an agreement with the Los Angeles County Board of Supervisors. Title to the 120 acres of property is in the State of California, which has leased it to Los Angeles County for fifty years.

Construction operations are actively commenced by the County of Los Angeles in accordance with the master plan of the foundation prepared by Harry Sims Bent. Because of safety hazards the Arboretum is closed to the public during construction.

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R. J. SEIBERT, *Editor*

VOL. I JULY, 1951 No. 4

THE POMEGRANATE

CHARLES GIBBS ADAMS

A few paces south of the *adobe* ranch house, near the Arboretum lake, stands the stump of an ancient pomegranate tree, bravely putting out new growth to reward the Historical Committee's revival work. It is well over one hundred years old—a survivor of Hugo Reid's orchard, listed in a letter to Abel Stearns on June 1, 1844. Our cover design is even older, derived from a color plate made in 1828.[1]

Probably no other tree has so venerable a written record as the pomegranate. Three thousand years ago, King Solomon sang to his love, "I will cause thee to drink of spiced wine of the juice of my Pomegranates;" and had them carved on the capitals of his temple columns. Centuries before Solomon's time, pomegranates were featured in the arts of Assyria, Egypt and Persia as symbols of fertility.

Ancient Jews considered the fruit sacred and the design appeared in their church vestments. So fond were they of the refreshment of pomegranates that certain Israelites complained of the desert to which Moses led them out of Egypt, saying it was "no place of Pomegranates." The liberator comforted them with the promise that their new land of Canaan would be a region "of wheat and barley, vines and fig trees and Pomegranates."

Greek Theophrastus, Aristotle's successor as head of the Peripatetic School and an authoritative horticultural writer, described the sacred fruit over three hundred years before Christ. While Pliny, the great Roman naturalist of the first half-century of the Christian era, named it one of the most valuable trees for garden beauty, deliciousness of its fruit and medicinal properties. Nearer to our day, Shakespeare placed Juliet's window above a pomgranate tree, among whose glistening foliage and lovely blossoms the nightingale sang so sweetly.

The sheer beauty of the tree,—with its fountain-like form, its glossy clean foliage, often red-veined, its exquisite blossoms of orange-scarlet with petals like crumpled silk, its crimson winter fruit, hanging long after the leaves have fallen and finally splitting open to reveal a treasure trove of rubies within—such beauty alone would render it a treasure in decoration, even if it were not of signal service to man in food, drinks, crafts and medicine.

Valuable astringents are derived from the bark of the roots, as well as medicines for throat and intestinal ills. Morocco leather owes its fine quality to being tanned with the rind of the fruit. The rind also makes fine black ink. John Parkinson, the famous herbalist of Elizabethan days declared it "the best sort of writing ink, which is durable to the world's end." In countries around the Mediterranean Sea, red dye is made from the flowers, and wine from the fruit, and a favorite refreshment is sherbet of its juices.

The pomegranate can be depended upon for continuous performance of these good works; there is written record of one tree that has borne steadily for two hundred years. In culture the pomegranate is the least demanding of good fruit trees. It will prosper in almost any soil from dessert to black *adobe;* it asks but little of food and drink, cultivation and pest control.

The tree's botanic name, *Punica Granatum L.,* means "the granulated (fruit) of Carthage." From that city it was introduced into Europe; and Spain's Granada was named for it. Botanically the Pomegranate belongs to the limited genus Punicacae, consisting of but two species, in the vast family of Myrtacae. This brings it into at least distant relationship with such widely separated plants as Myrtle, Eugenia, Feijoa, Guava, Melaleuca, and even Tristania and Eucalyptus.

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[1] Johann Gottlieb Mann, Deutschlands Arzney-Pflanzen. *2*, 1828.

CHAIN OF TITLE FOR RANCHO SANTA ANITA

(Prepared for LASCA by W. W. Robinson)

KING OF SPAIN

Spanish occupation of California commenced in 1769 with title to all the land vested in the King. Following the establishment of San Gabriel Mission in 1771, Santa Anita came under ecclesiastical jurisdiction.

THE MEXICAN NATION

Spanish rule in California gave way to Mexican in 1822, through Mexico's successful revolt against Spain. Administration of Santa Anita by the Mission continued until secularization was completed, in the late 1830's.

HUGO REID

Reid, a Scot who became a Mexican citizen in 1836, married an Indian woman in 1837, made San Gabriel his home in 1838, petitioned for Santa Anita in 1839. In due time—1841—Governor Alvarado gave him provisional title to Rancho Santa Anita. Governor Pio Pico granted full title in 1845 to this "Scotch Paisano."

HENRY DALTON

Dalton, an English merchant who came from Peru to California in 1843, bought Santa Anita from Hugo Reid in 1847. The following year California was ceded to the United States and, in 1850, admitted as a state to the Union. The Board of Land Commissioners upheld Dalton's title.

JOSEPH A. ROWE

Rowe, California's pioneer circus man, bought the rancho from Dalton in 1854.

WILLIAM CORBITT
and ALBERT DIBBLEE
1858

WILLIAM WOLFSKILL
1865

HARRIS NEWMARK
1872

ELIAS J. (LUCKY) BALDWIN
1875

ANITA BALDWIN McCLAUGHRY
ET AL.

These were the distributees under the decree of distribution, rendered April 24, 1913, of the estate of E. J. Baldwin who had died on March 1, 1909.

HARRY CHANDLER
1936

RANCHO SANTA ANITA, INC.
1936

STATE OF CALIFORNIA
1947

After purchase, the State leased the property to Los Angeles County. The non-political, non-profit California Arboretum Foundation Inc. then was established to plan and administer the Los Angeles State and County Arboretum on the homesite of historic Rancho Santa Anita.

CHAIN OF HORTICULTURE

SUSANNA BRYANT DAKIN

From King of Spain to State of California—from 1769 until 1951—successive owners have contributed to the horticulture of our Arboretum site. Even before becoming a mission rancho noted for rich pasture and sleek, black cattle, it was known by the Indians as "Place of Many Waters." They lived in *jacales* (brush huts) near the lake, and called this settlement *Aleupkig-na.*

In the locality there was a plentiful supply of food—growing wild and needing no tending. Fish abounded in the lake, and the Indians ate many small animals, birds and snakes (excluding only the rattler). Grasshopper, roasted on a stick, was considered a delicacy. From trees and plants growing on the place, came edible acorns, mountain cherry, chía (a small gray thistle seed), tender stalks of sage, various berries and roots. In his "Letters on the Indians," Hugo Reid has given some of their more palatable recipes.

To certain plants were ascribed healing properties. For instance, a medicine man would prescribe wild tobacco pills to cure fever; whipping with bunches of nettle and drinking the juice of *Datura stramonium,* for paralysis. Rheumatism was treated with the application of a string of dry nettle fuzz blisters set on fire like spunk. Lime pounded up with wild tobacco, was eaten to clean out the stomach and bladder.

Hugo Reid concluded, after a study of such simple remedies (all produce of the place) that "in regard to the diseases then prevalent, inasmuch as syphilis was unknown, brandy and its associates unused, and high living at low ebb, their nosology was very limited." Due to diet, "they carried teeth perfect to the grave."

When Reid acquired title to *Aleupkig-na*

(come to be known as the mission rancho of Santa Anita), he introduced advanced farming methods. Frequently he consulted with the Frenchman, Jean Louis Vignes, and Kentuckian William Wolfskill—two of his friends who, in Bancroft's Pioneer Register, were described as "the pioneers of California's greatest industry, the production of wine and fruit." With the padres at near by San Gabriel mission he exchanged fruit, flower and vine. The variety and extent of his planting is shown in his inventory of 1844.

William Heath Davis, visiting Santa Anita during that year, described the Reid family as living in lavish *hacendado* style, eating epicurean meals composed entirely from "production of the land." Alfred Robinson, author of the classic "Life in California," grew lyric over Santa Anita in Reid's day, writing:

"It is one of the fairy spots to be met with so often in California. On the declivity of a hill is erected a *molino*, or gristmill, surrounded with fruit trees and flowers. A beautiful lake lies calm and unruffled in front, and all around fresh streams are gushing from the earth, and scattering their waters in every direction."

Hugo Reid achieved fame as a fearless champion of his wife's people, as a writer, and a framer of California's constitution. He also was known for the excellence of his homemade wine, and the hospitality of his home. Yet he lacked Midas' touch, even in Gold Rush days; and was forced to sell Santa Anita for 20 cents an acre to his old friend Henry Dalton, an Englishman who settled in Southern California after years of business life in Lima, Peru.

Dalton added to Reid's vineyards and, for the first time, packed grapes in sawdust as often is done today for shipping. Having paid $2,700 for the property, he sold it after seven years for $33,000—to Joseph A. Rowe, California's pioneer circus man. Strange animals then roamed the pasture, but among all the later owners of Santa Anita only Rowe did not flourish. He knew nothing about agriculture and soon went back into the show business—leaving the ranch in the hands of banker Corbitt and his partner Albert Dibblee—a Santa Barbara *ranchero* married to a de la Guerra.

Corbitt and Dibblee were experienced in cattle ranching. Leaving the vineyards, orchard and flower garden to survive as best they could, the partners operated a profitable cattle business until the time came for subdivision. 2,000 acres in the west went to Leonard Rose for $2 an acre. He developed that section into a fine estate — calling it "Sunnyslope," growing wine grapes from Rhineland slips, and raising trotting horses.

The remainder of the original grant was conveyed to William Wolfskill—something over 11,000 acres for $20,000. The new owner of the homesite had come to California in 1831, with a beaver trapping expedition. Like Reid and Dalton, he naturalized as a Mexican citizen and married a native daughter. He was familiar with Santa Anita, having helped Hugo Reid in setting out vines grown from Vignes' French slips. He restored and added to the original vineyards and orchard—and popularized date growing, transplanting small palm trees from the various mission gardens. Near the *adobe* ranch house he planted seed of eucalyptus trees brought from Australia. They are among the oldest in California, and have grown to enormous size, as have his palm trees.

William Wolfskill died in 1866, leaving Rancho Santa Anita to his youngest son, Louis — married to a daughter of Henry Dalton. The period of their ownership was one of rapid change in the use and value of California land. During the Civil War, a three year drought ruined the cattle business. Emaciated black carcasses defaced her rolling hills and beautiful valleys, like flies on sticky paper. For a long time, cattle raising was considered unprofitable, too much at nature's mercy. Irrigation was extended, and citrus groves appeared in profusion.

Since Reid's day, Santa Anita owners had experimented with citrus and their groves were well established. The soil was good and, once again, water abounded. Prospective buyers hounded the Wolfskills, anxious to plant orange and lemon groves on 1,000 acre plots. For this purpose, Alfred and Katharine Chapman bought the section now known as "Chapman Woods." In 1872 Harris Newmark (author of "Sixty Years in Southern California") paid $10.50 per acre for the home ranch, reduced by sales to 8000 acres.

Merchant Newmark learned from Rose—his neighbor on Sunnyslope—how land can be made to yield a good return in wine grapes and citrus fruits. The cultivated area at Santa Anita he extended by irrigation into larger vineyards and planted tiny citrus trees. The more arid pasturelands he allotted to sheep, as an adjunct to his wool business in Los Angeles. A northern section he deeded to the Southern Pacific in anticipation of the "Iron Horse" whose arrival would skyrocket land values.

But before completion of the Southern Pacific, Newmark disposed of Santa Anita —at a fabulous price, to a fabulous person. In the spring of 1875, "Lucky" Baldwin passed through the San Gabriel Valley, in

search of mining property near San Bernardino. First his eye was taken by the elegant Rose estate and then, like others before him, he fell in love with the natural beauty of Santa Anita.

Says Palmer Conner in his "Romance of the Ranchos": "The mountains of the Sierra Madre loomed as sentinels behind the pastures of Santa Anita. In the arroyos, streams of water were rushing along the rocks hurrying down to the marsh in the center of the ranch where stood Hugo Reid's adobe, and the eucalyptus trees planted by William Wolfskill were racing each other in their reach for the sky. To Baldwin, as to Reid, it was a picture of enchantment. 'I'll buy it,' said he."

Harris Newmark put a price of $200,000 on the property and, after violent protest, Baldwin paid in cash out of the tin box that always accompanied him. Straightway he set out to rival Rose at Sunnyslope—Stanford and Flood in Northern California. Money flowed like water. "Lucky" had made it dramatically, at the Orphir mine in Comstock lode, and he spent it dramatically. He planted trees and flowers and vines by the thousand, gathering them from far places. Among those that survive are ginkgos from China, peppers from Peru, Australian tea trees (*Leptospermum laevigatum.*)

He restored the marsh, never a lake since the drought of the '60s, into the "fairy spot" of Reid's day. The old *adobe* he also restored, tearing down a crumbling wing and substituting frame construction for *adobe*, in that section. Baldwin built new the "Queen Anne's Cottage," complete with casino and dance floor; an elegant carriage house with mahogony stalls, a private race track, gondolas for the lake, fountains and little canals for the garden. These were all in the florid style of the late '70s. It seems strange that, at the end of his flashy, worldly life he chose to die in the *adobe* built by Hugo Reid for his Indian love—so simply, so long ago.

Santa Anita was neglected after Mr. Baldwin's death in 1909. Members of his family retained title until persuaded to sell, in 1936, to Harry Chandler, owner and editor of the Los Angeles Times and already a great landholder. Mr. Chandler found subdivision more profitable than cattle ranching or citrus growing, at Santa Anita. Only 111 acres were left, of the original grant, when the State and County paid $320,000 to Chandler heirs in 1947. Contrast Dalton's purchase price of $2700 for 13,500 acres one hundred years earlier!

The present site of the Los Angeles State and County Arboretum includes the lake and jungle area, the Reid *adobe*, the Baldwin buildings and park planting, a wooded knoll and open meadows with varying soils and exposures. The Sierra Madre still stands sentinel — the Wolfskill eucalypti and palm trees continue their race to the sky—the ancient pomegranate and a lemon tree remain to remind us of pioneer planting in Southern California.

Each earlier owner of Rancho Santa Anita developed the land for his private need and gain. Now a new era is commencing, with the establishment of an Arboretum out of public funds for public use. People of world wide reputations already have contributed thought, time, and money towards an ideal which may not be fully realized in one man's lifetime.

Dr. Frans Verdoorn left his work as editor and publisher of Chronica Botanica to serve as our organizing director. His vision combined with the architectural genius of Harry Sims Bent to produce our Master Plan. Frits Went, President of the California Arboretum Foundation, Inc., declares that no Arboretum in America has had a more inspired, initial lay-out. Indefatigable Dr. Went is himself a scientist of world reputation, long identified with the California Institute of Technology. The Arboretum absorbs him as an extracurricular activity that takes many hours a week.

When Dr. Verdoorn returned to his literary and publishing life, he suggested the appointment of a young man named R. J. Seibert to take on the directorship of the Arboretum as a life work. Dr. Seibert's government explorations in Central and South America have given him connections and ideas which will be invaluable in Arboretum development through the years. Once again, as under Indian occupation, plants are being experimented with for their medicinal properties.

As in Reid's day, seeds and slips and plants are coming to us from Spain and France—many, like Wolfskill's eucalypti, come from Australia. Peru and China are furnishing us, as they did Dalton and Baldwin, with arboretum specimens — and South Africa is a land for further exploration to find useful and beautiful plants and trees that will flourish in semi-arid Southern California. Reid, Dalton, Wolfskill, Baldwin all pioneered purely in horticulture. Now, under Dr. Seibert's direction, Rancho Santa Anita may make her greatest contribution—in allied fields of scientific research.

ORCHARD AND VINEYARD

(Reid's Inventory, 1844)

Hugo Reid first considered selling Santa Anita early in 1844, when hard times were upon him. He wrote to the great landholder, Don Abel Stearns, on June 1, asking advice about a selling price—saying "*con dolor de corazón* I do it, for the situation is beautiful and the ground enjoyable." Among the assets of Santa Anita, Reid listed the following plantings in the vicinity of his *adobe* ranch house:

"The vineyard is walled around. It contains vines totaling 22,730 and ground sufficient to make up the number of 40,000, besides 430 varieties of fruit trees: 20,500 *parras* (vines raised on stakes) of *uba prieta* (dark grapes), 2,070 *uba blanca* (white grapes), 160 *uba cimarrona* (native maroon grapes) in all, 22,730 vines and ground sufficient to make up the number of 40,000; 21 fig trees, 7 plums, 25 pears, 5 apples, 32 oranges, 40 *granadas* (pomegranates), 2 *advechegos* (probably honey mesquite trees), 240 *duraznos* (peaches), 8 *capulines* (blood oranges), 3 *nogales* (walnut trees) 7 *olivos* (olive trees), 40 *limones* (lemon trees), in all, 430 trees."

THE HUGO REID ADOBE, 1839-'40

Plans have been completed for the restoration of the Hugo Reid *hacienda*. These include, within the house itself, a *sala* or living room, a library-office, two bedrooms, a dining room, kitchen and storeroom (always kept locked, in Doña Victoria's day), and *baño*. Outside are characteristic corridor-porches opening on the patio garden, lake and mountain view, and eventual orchard. There will be a *tule*-covered *ramada* for outdoor dining, and the huge beehive oven around which life centered in early California establishments. Low adobe walls again will separate various sections, such as flower garden and vineyard. *Jacales* or brush huts, simulating those used by Indian servants, will be half-hidden by planting near the lake's laundry-stones.

A fountain will resume its play, in the patio, and garden planting will duplicate Hugo Reid's own inventory—within space limitations. The few trees remaining from his day—notably a decrepit lemon and the pomegranate—are being cherished through the planning and construction period. Planting and architectural additions of a later date will be removed (except for a Eucalyptus planted by Wolfskill in the '60s, a large magnolia and a camphor shading the house, two rare palms overhanging the lake—and a few other specimens which we are not ruthless enough to do away with). Such clearing is necessary to allow room for the authentic re-creation of a noted California residence of the 1840's.

Before choosing an architect and landscape architect, members of the Historical Committee spent a full year in research—reading, writing, and visiting old *adobes* all over California. Eventually Charles Gibbs Adams was selected to visualize our historic gardens, and Harry Sims Bent to plan the architectural restorations and incorporate the entire Historical Preserve within the Arboretum's Master Plan. Copies of his comprehensive "Program" are available at the Arboretum office. Mr. Bent commented in an enlightening way on our long-term planning (March 1, 1951):

"GENERAL: The Hugo Reid project forms the major portion of the overall restoration program. The program for the two Baldwin structures is relatively simple, in terms of work and research.

"Your Committee decided last Spring that the Hugo Reid premises were to be re-created to demonstrate the original establishment and its basic household functions. It also was decided that the work and plantings of later periods must be removed, to make way for a unified scene of Early California in the 1930's and 1840's.

"Clearly, only a vestige of the original establishment is standing, and even that is encrusted with work that does not belong to the original period. Many essential elements have been destroyed through changing ownership, and long neglect. Practically all of the present plantings belong to the Baldwin regime, bearing no relation to Hugo Reid.

"RESTORATION: True restoration work, as dis-

tinguished from mere repair or preservation effort, aims at the re-creation of authentic scenes as they appeared in their hey-day. Sentimental preservation, often confused with restoration, misses that significant mark. Your Committee discussed the difference and decided on true restoration vs. simple preservation.

"RESEARCH: All research behind this program has been directed to fill in the blanks, where concrete records are lacking. Few physical marks of Hugo Reid remain. However, his life and character are well documented through his letters, and records of his contemporaries and close associates. 'A *Scotch Paisano,*' by Susanna Bryant Dakin, authentically and vividly pictures Hugo Reid, his character, aspirations, way-of-life, and relations with the Early California scene. No act of a man's life is more expressive of his character, way-of-life and aspirations, than the house that he builds for his family. In reverse, then, the documented picture of Hugo Reid can be expected to produce a plausible definition of his physical establishment.

"It is clear that Hugo Reid was an observant individual; that he was concerned with the perquisites of life: that his early background and education gave him tastes and discriminations extraordinary for his time and place: that his affairs and associations linked him closely with the Monterey scene.

"His marriage to Doña Victoria in no way reduced him to the status of a squaw-man. His Indian wife, herself, had been tuned to graceful living through adoption by the wealthy and prominent Doña Eulalia Perez y de Mariné.

"Because of his many business and social affiliations with California's early capital and busiest port, it seems logical to assume that Hugo Reid would be influenced by the Monterey scene when he came to the creation of his own home. William Heath Davis, visiting Santa Anita in 1844, expressed astonishment at the way the Reids lived—comparable to Thomas Larkin, say, or Captain Cooper in the capital.

"Monterey offers many well preserved structures to study. This distinct style, from its simple beginnings, shed a wide influence throughout the State, and even as far away as the Hawaiian Islands. Its adoption was definitely linked with commerce. In most far flung examples, the builders did business with Monterey traders and absorbed their ideas. Hugo Reid had been a trader before becoming a rancher, so it is not strange that he lived in the Monterey rather than in the *Paisano* tradition of his neighbors in Southern California.

"The old buildings of Monterey and of the Monterey type have been carefully screened. Of these, a few from the very early period, were selected for a special study, as listed below. These were examined from the standpoint of atmosphere, plan arrangements, scale, use of materials, and appropriate detail. The restoration plan does not propose to lift or duplicate total effects or features, but merely to apply details and methods certain to have been used by Hugo Reid himself.

"Applicable examples of the Early Monterey style, studied for atmosphere, effects, plan, and detail precedent.

Cooper House .....Monterey

Casa Soberanes .....Monterey

Larkin House .....Monterey

Casa Munras .....Monterey

Casa Alvarado .....Monterey

Stokes House .....Monterey

Old Custom House.....Monterey

Casa Sanchez .....Monterey

La casa del Rancho Guajome
San Luis Rey

Avila Adobe .....Los Angeles

Castro House.....San Juan Batista

Caneda Adobe .....Santa Barbara

Emil Goux Adobe.....Santa Barbara

Yorbe-Abade Adobe .....Santa Barbara

Miranda House .....Santa Barbara

Guadalupe Rancho Adobes..Santa Barbara

"In addition to the above, restoration techniques in adobe and woodwork were studied at the La Purísima Mission, Federal Restoration Project, Lompoc, California.

"MONTEREY STYLE: This can be defined as the 'merchant' style of Early California, during the period 1825-1850. It is clearly distinguishable from the other contemporary mode of building design throughout California where Spanish and Mexican tradition predominated.

"Early traders of the Port of Monterey would not put up for long with the discomforts of living in a traditional California house. The flow of ocean trade quickly brought in refined building materials. These came mainly from New England, and Great Britain, and represented the nostalgia of Anglo-Americans for household comfort and convenience. While basic wall construction followed the indigenous pattern for labor and materials, the influx of such things as double-hung windows, glass, louvred shutters, railings, mantels, interior trim, hardware, and a limited amount of milled lumber, soon changed the face of Architecture in and around Monterey. The heavy tile roof of Mission tradition, gave way to the lighter and more economical shake or shingle roof, thus saving much valuable framing lumber. The damp, northern climate was not kind to the exposed adobe wall that moved north from its arid beginnings, hence the practical and graceful use of overhanging balconies, and spacious porticos extending out under the roof line. The same ships that brought building supplies, carried an increasing quantity of furniture and utensils from New England, Great Britain, and Europe. Gradually the primitive furnishings of the traditional Paisano home were replaced. This, in turn demanded more and more interior refinements and elaborations. And so, the very early Monterey style, evolved toward a comparatively sophisticated version.

"THE HUGO REID PLAN: Research leads to the conclusion that the original Hugo Reid establishment followed the very early Monterey style: though its

Rancho Santa Anita in the 1880's. The "Lucky" Baldwin Casino with the Hugo Reid Adobe in the left background.

general layout must have followed the *hacienda* scheme, rather than the urban plan of Monterey proper. For the more pretentious ranch-houses or *haciendas*, the enclosed quadrangle was the traditional layout. This involved greater scale and cost than Hugo Reid could afford. For the smaller *haciendas*, throughout California, the L-shaped plan was the practical alternative. This brought most of the benefits to the enclosed quadrangle by means of inexpensive adobe walls around the open sides. The standing Reid structure indicates that such was the general arrangement."

THE BALDWIN CASINO AND CARRIAGE HOUSE

(1876-1880)

A recent termite survey reveals more rapid deterioration in the frame buildings built by "Lucky" Baldwin than in Reid's *adobe*, constructed forty years earlier. There is greater urgency for their restoration. Influenced by this and other factors, the Historical Committee has appointed Maurice Block to plan the Victorian restorations and bring cost estimates to our June meeting. No structural changes are contemplated, nor will an architect's services be needed—beyond occasional consultation with members of our architectural sub-committee.

Already, individual Baldwins have promised cooperation and donations of family heirlooms, including "Lucky's" own tally-ho. A namesake nephew, E. J. Fawcett, will serve as historical custodian, along with Dewey Nelson who lives inside the Arboretum. More responsible and interested people could not be found, in or out of civil service.

As planner and supervisor, Maurice Block is well-qualified — having created the period rooms at the Huntington Art Gallery, including one actually of the Victorian era. With him will be working a master craftsman named Sam Maloof, whose talents extend from the manufacture of contemporary furniture to *adobe* brick-making, *paisano* style. A letter from Mr. Block was requested, read and approved at the May meeting of the Historical Committee. In brief, he writes:

"The restoration of the "Lucky" Baldwin Casino seems to me to consist mainly of repairs and replacements, from top to bottom, of structural and ornamental details indicated by the original plan and by the nature of the place -no new building. The approach to the cottage and its immediate surroundings of garden or lawn should be designed in harmony as an aid in giving the place character and atmosphere.

"Intended exclusively for entertainment, the cottage would have been rather elaborately and colorfully furnished. I think the Victorian tendency towards heaviness should not be emphasized, that the project should be carried through with a touch of fantasy, more like a stage set than a house to be lived in. (I think of the sets for the Helen Hayes play, 'Victoria Regina'). In other words, the medium for painting the picture should be water color rather than oil. There should be a certain gaiety about it although not to the extent of cheapening it or making it a caricature. It should have an atmosphere of expectancy- as if living creatures might appear in it at any moment.

"In the stable, besides structural restoration, the effort should be largely recreation of the original setting with such indications as can be given, of the bustle of life that once went on there, like arrested pageantry."

LOS ANGELES STATE AND COUNTY ARBORETUM

HISTORICAL COMMITTEE

ANNUAL REPORT — JUNE 12, 1951

Under direction of President Went, the Historical Committee was formed and commenced its active life in March, 1949. Since that date, $5750.00 has been raised by private subscription to defray the cost of research and planning pertaining to restoration of the three historic buildings at the Rancho Santa Anita. These lie within the Historical Preserve as defined in the Arboretum's Master Plan. Restorations will include gardens adjacent to each building.

We wish at this time to express deep appreciation to Charles Gibbs Adams for his contribution of time and thought in preliminary planning of the garden restoration—to Harry Sims Bent, Master Planner, for his completed work on the Reid *adobe* architectural reconstruction plan—to Maurice Block, for his willingness to supervise the Victorian restorations of "Lucky" Baldwin's Casino and Carriage House. Indeed almost every member of our large committee merits special acknowledgment.

Howard Miller is performing a valuable service for us. Besides acting as Treasurer for the California Arboretum Foundation, Inc., he has set up a separate Historical Fund. When our active money raising campaign commences, probably this fall, you may be sure that donations for restoration purposes go directly into this fund, and are spent with great care. Each outgoing check must be signed by Mr. Miller and an officer of the Historical Committee. Each donation is tax exempt.

John Anson Ford has been serving since the beginning, on our Committee—as well as on the Arboretum Foundation Board. He is valuable as an interpreter to his fellow County Supervisors, explaining our problems and progress. In many ways Mr. Ford contributes to the congeniality and interest of our meetings. His is a heartening influence.

R. J. Seibert serves ex-officio, as Arboretum Director. He has expressed admiration of the literary value of our minutes and wishes a copy to be kept in the Arboretum Library. This seems the place to thank W. W. Robinson for keeping a record which goes far beyond conventional minutes. As you know, he is a well-known author (of California history and children's books) and we appreciate the trouble he takes to entertain us, as well as to record events. Ed Ainsworth occasionally pinch-hits, in his own—more ribald—style!

Georgina Hicks Mage interested the National Society of Colonial Dames of America in our project—besides personally contributing a great deal of thought and hospitality to the Historical Committee. Besides the Dames, there are several organizations already showing constructive interest in a long-term program, without being solicited in any way. These include both the Sons and Daughters of the Golden West, the California and Southern California Historical Societies, the Pasadena and Digger Garden Clubs. Also we have a gratifying communication from Newton Drury, formerly head of the National Park Service, and now Chief of California's Division of Beaches and Parks. On April 30, 1951, he wrote to our chairman:

"I was very much interested upon my return to California and to the California State Park System, to read your letter of April 11, and the attached plan for restoration of the structures at the Los Angeles State and County Arboretum. Since I was stationed at the Army Balloon School at Arcadia in World War I, the subject has a special appeal to me.

"I am again looking forward to working with you and your group, the Los Angeles State and County Arboretum Historical Committee."

HISTORIAL COMMITTEE: MEMBERSHIP

CHAIRMAN:

MRS. RICHARD Y. DAKIN
(Susanna Bryant)
744 Rockwood Road
Pasadena 2, California
SYcamore 9-1376

Board Member of California Arboretum Foundation, Inc., and California Historical Society. Biographer of Hugo Reid.

SECRETARY:

W. W. ROBINSON
Title Insurance & Trust Co.
433 South Spring Street
Los Angeles 13, California
MAdison 6-2411

California historian. Editor of publications (and Vice President) of Title Insurance & Trust Co. Board Chairman, Friends of U.C.L.A.

TREASURER:

HOWARD A. MILLER
Assistant General Manager
Los Angeles Chamber of Commerce
1151 South Broadway
Los Angeles 15, California
RIchmond 2441

Formerly Agricultural Director, L.A.C. of C. Treasurer of California Arboretum Foundation, Inc.

SUB-COMMITTEES

I. POLICY (overseeing public relations, publications, library acquisitions of documents, books, pictures):

CHAIRMAN:

J. GREGG LAYNE
Los Angeles City Water & Power Dept.
207 South Broadway
Los Angeles 24, California
MIchigan 4211

Editor, Historical Society of Southern California Quarterly. Book editor, California Historical Society Quarterly.

MEMBERS:

ED AINSWORTH
Los Angeles Times
202 West First Street
Los Angeles 53, California
MAdison 2345

Feature writer and member of Editorial Board, Los Angeles Times.

MRS. RICHARD Y. DAKIN

JOHN C. MACFARLAND
1130 Garfield Avenue
South Pasadena, California
SYcamore 9-2588

Southern California Horticultural Institute. Board member, California Arboretum Foundation, Inc. Formerly a partner of Gibson, Dunn, and Crutcher, Attorneys.

LAURENCE POWELL
The University Library
U.C.L.A., 405 Hilgard
Los Angeles 24, California
BRadshaw 2-6161

Librarian, U.C.L.A. Book Editor of Westways (published by the Auto Club of Southern California).

W. W. ROBINSON

DR. FRITS W. WENT
California Institute of Technology
1201 East California St.
Pasadena 4, California
SYcamore 6-7121

President, California Arboretum Foundation, Inc. Earhart Plant Research Laboratory Director (California Institute of Technology).

II. FINANCE (donations, disbursements and contracts):

CHAIRMAN:

EDWARD A. DICKSON, President
Western Federal Savings & Loan Assn.
600 South Hill Street
Los Angeles 14, California
MAdison 2436

Board Chairman, Regents of the University of California. President, Historical Society of Southern California.

WILLIAM HERTRICH
1600 Orlando Road
San Marino 15, California
SYcamore 6-3677

Board member of California Arboretum Foundation, Inc. Supervised development of Huntington Botanic Garden, was its first Curator; now Curator Emeritus.

CHARLES S. JONES, President
Richfield Oil Corporation
555 South Flower Street
Los Angeles 13, California
MAdison 9-4111

President, Men's Garden Club of Los Angeles. President of Associates, California Institute of Technology.

MRS. DAVIS MERWIN
(Janette Main)
1355 Circle Drive
San Marino 5, California
SYcamore 6-3684

President, Diggers Garden Club.

DR. PHILIP MUNZ
Rancho Santa Ana
Route 3
Anaheim, California
PLacentia 5244

Director, Rancho Santa Ana Botanic Garden of the Native Plants of California (founded by Susanna Bixby Bryant in memory of her father, John W. Bixby).

DR. RUSSELL J. SEIBERT
Los Angeles State and County
Arboretum
291 North Old Ranch Road
Arcadia, California
DOuglas 7-3444

Director, Los Angeles State and County Arboretum. Formerly with U. S. Department of Agriculture.

V. FURNISHINGS (interiors, heirlooms, historical exhibits):

CHAIRMAN:

MRS. JOHN R. MAGE
(Georgina Hicks)
2840 East California Street
Pasadena 8, California
RYan 1-6136

Chairman, Los Angeles-Pasadena Committee of the National Society of Colonial Dames of America. Regent of Gunston Hall on the Potomac.

MEMBERS:

MAURICE BLOCK
625 Westgate
Pasadena, California
SYcamore 2-3390

Formerly Curator of art collections and originator of period rooms, H. E. Huntington Library; member Art Museum Directors Association.

LINDLEY BYNUM
1615 Camden Drive
Los Angeles 25, California
ARizona 7-5143

California historian. Assistant to Dr. Sproul, President of the University of California.

HENRY DREYFUSS
969 San Pasqual
Pasadena 5, California
SYcamore 6-7155

Industrial Designer. Past President of National Society of Industrial Designers.

MRS. WESLEY HEARD
(Elizabeth Urmston)
510 Dutra Street
Monterey, California

The restorer, with Dr. Heard, of the Alvarado adobe—built in the 1830's.

JOHN PALMER LEEPER
Pasadena Art Institute
46 North Los Robles
Pasadena 1, California
SYcamore 3-6167

Director, Pasadena Art Institute. Formerly assistant director at Corcoran Art Gallery, Washington, D. C.

PRINCESS PIGNATELLI
(Conchita Sepulveda)
1757 Buckingham Road
Los Angeles 6, California
WAlnut 2364

Feature writer, Los Angeles Examiner.

MRS. ABIGAIL VON SCHLEGELL
1138 Arden Road
Pasadena 5, California
SYcamore 2-6478

President, Pasadena Art Institute. Director, Pasadena Flower Show Association.

MEMBERS:

HOMER CROTTY (Partner)
Gibson, Dunn, & Crutcher, Attorneys
634 South Spring Street
Los Angeles 14, California
MUtual 5381
President, State Bar. Board Chairman of Southwest Museum and Friends of the Huntington Library.

JOHN ANSON FORD
211 West Temple Street
Los Angeles 12, California
MUtual 9211
Los Angeles County Supervisor.

HOWARD A. MILLER

III. ARCHITECTURAL RESTORATION (data on materials, architectural details, and construction techniques):

CHAIRMAN:

ARTHUR WOODWARD
Chief Curator of History
Los Angeles County Museum
Exposition Park
Los Angeles 7, Calif.
RIchmond 2194
On loan (1951) to National Park Service; Historical consultant to Alaska Recreation Survey. Advisor in La Purísima Mission, Federal Restoration Project, Lompoc, California.

MEMBERS:

HAROLD CHAMBERS
124 West Fourth Street
Los Angeles 13, California
MAdison 9-3331
Architect, Past President A. I. A.

ROBERT G. CLELAND
Henry E. Huntington Library
San Marino 15, California
SYcamore 2-6141
California historian. Member of permanent research staff, H. E. Huntington Library and Art Gallery.

M. R. HARRINGTON, Curator
Southwest Museum
234 Museum Drive
Los Angeles 65, California
CApital 1-1318
Advisor on San Fernando and La Purísima restoration projects. Author of articles in "The Masterkey" and other magazines, also of books including "How to Build a California Adobe."

IV. HISTORICAL GARDENS (authentic lay-outs and plant materials):

CHAIRMAN:

CHARLES GIBBS ADAMS
Landscape Architect
440 Arroyo Drive
South Pasadena, California
PYramid 1-2648
Formerly President California Garden Clubs, Inc. President, Los Angeles City Planning Association. National President Cactus and Succulent Society of America. Director, National Council of Garden Clubs.

MEMBERS:

MRS. FRED HATHAWAY BIXBY
(Florence Green)
Rancho Alamitos
Long Beach 4, California
L. B. 81177
Developer, with Mr. Adams, of historic garden at Rancho Los Alamitos. Board member of L. A. County Museum and Scripps College.

MRS. ERNEST A. BRYANT, JR.
(Judith Tilt)
1200 Virginia Road
San Marino 5, California
RYan 1-7743
Pasadena Garden Club.

LEO CARRILLO
639 East Channel Road
Santa Monica, California
State Park Commissioner.

MRS. HOWARD CUNNINGHAM
(Hortense McLaughlin)
2930 East California Street
Pasadena 10, California
SYCAMORE 6-6666
Pasadena Garden Club.

WILLIAM HERTRICH
1600 Orlando Road
San Marino 15, California
SYcamore 6-3677

Board member of California Arboretum Foundation, Inc. Supervised development of Huntington Botanic Garden, was its first Curator; now Curator Emeritus.

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President, Diggers Garden Club.

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Rancho Santa Ana
Route 3
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PLacentia 5244

Director, Rancho Santa Ana Botanic Garden of the Native Plants of California (founded by Susanna Bixby Bryant in memory of her father, John W. Bixby).

DR. RUSSELL J. SEIBERT
Los Angeles State and County
Arboretum
291 North Old Ranch Road
Arcadia, California
DOuglas 7-3444

Director, Los Angeles State and County Arboretum. Formerly with U. S. Department of Agriculture.

V. FURNISHINGS (interiors, heirlooms, historical exhibits):

CHAIRMAN:

MRS. JOHN R. MAGE
(Georgina Hicks)
2840 East California Street
Pasadena 8, California
RYan 1-6136

Chairman, Los Angeles-Pasadena Committee of the National Society of Colonial Dames of America. Regent of Gunston Hall on the Potomac.

MEMBERS:

MAURICE BLOCK
625 Westgate
Pasadena, California
SYcamore 2-3390

Formerly Curator of art collections and originator of period rooms, H. E. Huntington Library; member Art Museum Directors Association.

LINDLEY BYNUM
1615 Camden Drive
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ARizona 7-5143

California historian. Assistant to Dr. Sproul, President of the University of California.

HENRY DREYFUSS
969 San Pasqual
Pasadena 5, California
SYcamore 6-7155

Industrial Designer. Past President of National Society of Industrial Designers.

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The restorer, with Dr. Heard, of the Alvarado adobe—built in the 1830's.

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SYcamore 3-6167

Director, Pasadena Art Institute. Formerly assistant director at Corcoran Art Gallery, Washington, D. C.

PRINCESS PIGNATELLI
(Conchita Sepulveda)
1757 Buckingham Road
Los Angeles 6, California
WAlnut 2364

Feature writer, Los Angeles Examiner.

MRS. ABIGAIL VON SCHLEGELL
1138 Arden Road
Pasadena 5, California
SYcamore 2-6478

President, Pasadena Art Institute. Director, Pasadena Flower Show Association.

MEMBERSHIP

Annual Associate Membership	$ 5.00
Annual Membership	10.00
Annual Contributing Membership	25.00
Annual Sustaining Membership	100.00
Annual Sponsor Membership	250.00
Life Membership	500.00
Founders	1000.00 or more
Benefactors	5000.00 or more

CLUB MEMBERSHIPS are available, at any amount, from $10 a year or more.

ALL CONTRIBUTIONS DEDUCTIBLE UNDER FEDERAL INCOME TAX LAW:

Checks should be made payable to the California Arboretum Foundation, Inc., and sent to our headquarters at 291 North Old Ranch Road, Arcadia, Calif. Phone DOuglas 7-3444.

Donations for Historical Restorations should be made payable to California Arboretum Foundation, Inc., Historical Fund.

The Los Angeles State and County Arboretum is operated by California Arboretum Foundation, Inc., a non-profit corporation. The Foundation is developing and managing the Arboretum under an agreement with the Los Angeles County Board of Supervisors. Title to the 120 acres of property is in the State of California, which **has leased it to Los Angeles County for fifty years.** Construction operations are actively commenced by the County of Los Angeles in accordance with the master plan of the foundation prepared by Harry Sims Bent. Because of safety hazards the Arboretum is closed to the **public during construction.**

Operated By

California Arboretum Foundation, Inc.

LOS ANGELES STATE and COUNTY ARBORETUM
ARCADIA - CALIFORNIA
QUARTERLY JOURNAL

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Annual Report
1950-51

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Mrs. William D. Shearer

John Anson Ford, *Ex-Officio*

(*Founded Through the Efforts of the Southern California Horticultural Institute*)

LOS ANGELES STATE and COUNTY ARBORETUM

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GEORGE H. SPALDING.....*Superintendent*

W. QUINN BUCK.....*Propagator*

J. THOMAS MCGAH.....*Plant Recorder*

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THELMA G. BLANCHARD.....*Secretary*

JANET WRIGHT DEICHER.....*Research and Library* (Part time)

LASCA LEAVES

Quarterly Journal of the

LOS ANGELES COUNTY STATE *and* ARBORETUM

A CALIFORNIA ARBORETUM FOUNDATION, INC. PUBLICATION

R. J. SEIBERT, *Editor*

VOL. I OCTOBER, 1951 No. 5

ANNUAL MEMBERSHIP MEETING
CALIFORNIA ARBORETUM FOUNDATION, INC.

Message of President, FRITS W. WENT

Delivered June 12, 1951

Ladies and Gentlemen,
Members of the
California Arboretum Foundation:

I bid you welcome to our annual meeting. It is with great satisfaction that the staff and trustees of the Arboretum see you all gathered here, enabling them to show and tell you of the progress made during the last year by this vigorously growing young institution.

When one works with a venture of such magniture as this new Arboretum and one is continually in contact with people of vision, who have dozens of worthwhile and important suggestions for its development, one may have the impression that progress is slow. It is hard to realize all the limitations necessarily imposed upon a development of this kind, among which the principal one is the rate of growth of plants, which cannot be pushed beyond certain limits. Therefore, every effort is being made to speed up the preparation of the land for planting. Other limitations are that in the interests of proper development, a master plan must be followed to insure the most effective and logical display of plant material. This requires an orderly sequence of construction, of drainage and other facilities as grading, roads, irrigation system, etc. Finally there is the perennial limitation of funds. I have to acknowledge gratefully the vision and confidence of the County Board of Supervisors in this Arboretum project. Without their sparking contributions in the purchase of the land, funds for capital improvement, and for operation very little would have been accomplished to date.

However, once the Arboretum is open to the public the degree of public interest should control its further development. We are most fortunate to have you as a nucleus for such development of public interest, and a staff which is keenly aware of the importance of a very close contact between the Arboretum and the public.

ANNUAL REPORT 1950-51

Since our last meeting on these grounds held just one year ago, you will see that there have been considerable changes in our surroundings.

Construction:

During the latter part of last June, the County of Los Angeles let contracts to the amount of $88,000 to start the capital improvement of the grounds of the Arboretum according to our approved master plan. The improvement work accomplished has consisted of *preliminary phases* of these basic items: clearing of dangerous old trees, demolition of worthless structures, general grading, dredging, drainage, general sewage and water system, and a small portion of the road paving.

This preliminary work, after being extended by the additional work starting the end of this month, will sufficiently complete the capital improvement details within the central portion of the grounds to allow the Arboretum staff to commence on the permanent display plantings within this limited area:

Architect:

It is with deepest regret to the Foundation Trustees that ill health and other unfortunate circumstances have made it necessary for the architect, Mr. Harry Sims Bent, to withdraw from the program.

Mr. Bent's master plan for the Arboretum has embodied all of the requirements to make this a superb Arboretum and one of distinction. His many hours of uncompensated time and deep interest in the Arboretum will always be remembered by those of us with whom he worked so closely.

It is hoped that his far-seeing vision, in the form of our master plan for the Arboretum, may be carried on to its proper development for the enjoyment of many generations to come.

Baldwin Avenue:

Since its inception, future plans for the Arboretum, its access, forecourt, entrance, parking and service requirements, have relied on the need for the construction of Baldwin Avenue, particularly between Colorado Boulevard and Huntington Drive, following along the eastern boundary of the Arboretum.

This matter has finally been settled and Baldwin Avenue will be constructed within the next year. After its completion, we shall be able to devote our planning to final details regarding forecourt, entrance, service area, and of course, our future buildings.

Horticultural Program:

The past year has seen substantial progress in our growing program. During the calendar year 1950, 2466 items were received. This year to date, more than 1000 items have been received. Correspondence has been carried on with a considerable number of institutions and individuals throughout the world, and a large proportion of the seed received has come from overseas. We have been able to keep the growing collections well labelled and all records are up to date. This is a prodigious task.

The greenhouse and lathhouse are filled to capacity. Many plants are ready for immediate planting on the grounds.

During the past year several hundred plants have been distributed to various agencies for test plantings along our highways and in our parks. Test plantings of *Eucalyptus* and *Acacia* have been established on the Arboretum grounds. A start has been made on our permanent plantings in the areas of the Arboretum where water is available.

A small nursery for stock plants has been started. This nursery also contains a collection of drug plants being grown for various purposes under a co-operative program with various government and educational agencies.

Dr. G. P. Lux, of Clover Crest, Monrovia, has made propagating material available to us from his extensive collection of plants received from the U: S. Department of Agriculture over the past 30 years. Much of this plant material is not available elsewhere. This is a valuable collection and we are propagating a large portion of it as rapidly as possible for use on the grounds.

In October of last year, Mr. W. Quinn Buck came to the Arboretum as propagator, bringing with him his very fine and extensive collection of *Hemerocallis*.

Our collection of Australian plants has increased considerably during the past year and we feel that it contains some really worthwhile ornamentals.

Research Program:

The County of Los Angeles, for the fiscal year 1950-51, has contributed in the amount of $34,000 toward the research program of the Arboretum. The following is the resolution by the County Board of Supervisors adopted August 1, 1950:

"IN RE CALIFORNIA STATE AND COUNTY ARBORETUM: RESOLUTION PROVIDING SPECIAL RESEARCH BY CALIFORNIA ARBORETUM FOUNDATION, INC., DURING FISCAL YEAR ENDING JUNE 30, 1951.

WHEREAS, the County believes it is to its best interest to have research made in the categories hereinafter set forth:

NOW, THEREFORE, the County expressly requests the Foundation to undertake the hereinafter set forth research program during the fiscal year ending June 30, 1951:

1. The introduction, propagation, growing, and testing of new species and varieties of plants from as many other regions of the world with a climate similar to Southern California as possible. This includes continued and increasing correspondence and other contacts with horticultural and botanical institutions all over the world, also the keeping of complete and detailed records of all stages of the research from receipt of seed or plants to final disposition.

2. Extension of catalogue of plants being grown or which have been grown in Southern California. Each entry is being carefully annotated, giving, wherever possible, source, notes on cultivation and related data. To information already being included will be added, whenever possible, present locations of outstanding mature specimens in Los Angeles County. Particular emphasis is being placed on trees and shrubs suitable for roadside planting.

3. Continuation of the Union Catalogue of literature on sub-tropical horticulture available in the larger libraries of the United States, particularly at the United States Department of Agriculture, the Gray Herbarium of Harvard University, and the Arnold Arboretum and its exten-

sion to other libraries of similar nature and scope.

4. Collecting of photographs of specimen plants of as many of the plants entered in the research file mentioned above as possible. All photographs will be carefully screened and only clear reproductions of plants typical of a given species or variety will be acquired.

5. Extension of that special section of the library containing books on sub-tropical trees and shrubs, their culture, maintenance, and propagation, and such other books as pertain directly to the research program.

6. The planning for and commencement of permanent planting of the Arboretum grounds, with special emphasis on its future needs as a research and educational institution for the Los Angeles County area."

Co-operative Research Agencies:

1. The Division of Plant Exploration and Introduction Bureau of Plant Industry, U. S. D. A., has furnished planting material of *Strophanthus* and other potential cortisone-producing plants for our testing and experimental planting in this region.

2. The U. S. Soil Conservation Service, San Fernando, furnished cover cropping plants for observation and use in erosion control and soil building purposes on cut and fill areas. This agency also furnished a large number of *Eucalyptus* species for testing on the Arboretum grounds.

3. The Los Angeles Flood Control District has furnished Max.-Min. thermometer and rain gauge for official observation of temperature and rainfall data at the Arboretum.

4. The Department of Pharmacy, University of Southern California, has furnished seed of certain Solanaceae for experimental growth and strategic alkaloid analysis, particularly atropine.

5. The California State Highway Department has been utilizing many of our surplus plants of certain species for the purpose of testing their potentialities as future freeway planting material.

6. Botany Department, U. C. L. A., mutual exchange of surplus plant materials for comparative growth potentialities in two specifically different areas within Los Angeles County.

Foundation's Committees:

Executive Committee:
Dr. F. W. Went, Chairman
Dr. Samuel Ayres
Mr. Robert Casamajor
Mr. William Hertrich
Mr. Howard A. Miller
Dr. Russell J. Seibert, ex-officio

Planning Committee:
Dr. F. W. Went, Chairman
Dr. Samuel Ayres
Mr. Robert Casamajor
Mr. Ralph D. Cornell
Mr. William Hertrich
Mr. Howard A. Miller
Dr. Russell J. Seibert, ex-officio

Library Committee:
Mr. Robert Casamajor, Chairman
Mr. William Hertrich
Mr. John C. Macfarland
Dr. Philip Munz
Dr. Russell J. Seibert, ex-officio

Publications Committee:
Mrs. Richard Y. Dakin, Chairman
Mr. Robert Casamajor
Mr. William Hertrich
Dr. Russell J. Seibert, ex-officio

Membership Committee:
Mrs. Thomas Fleming, Chairman
Mrs. Ross K. Boore
Mr. & Mrs. G. Buffum
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Mrs. A. Ray Jewel
Mr. Morris B. Miller
Mrs. Charles W. Paddock
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Mr. & Mrs. G. Simpson
Mr. Leonard Strater
Mrs. W. J. Van Valkenburgh
Mr. & Mrs. A. B. Young

Finance Committee:
Mr. J. F. Douglas, Chairman
Mr. J. M. Reily, Assistant Chairman
Mr. Walter W. Candy, Jr.
Mr. Lyman R. McFie
Mr. Samuel B. Mosher
Mr. Francis Moulton
Mr. George J. O'Brien
Mr. Stuart O'Melveny
Mr. Chester A. Rude

Historical Committee:

A complete report of the Historical Committee, chaired by Mrs. Richard Y. Dakin, appeared in the Summer, 1951, issue of LASCA LEAVES.

Financial Report:

Total Income—July 1, 1950 to June 30, 1951		
Subventions—		
Los Angeles County		$43,550.00
Memberships		3,985.00
Donations		650.00
Rentals		800.00
Publications		3.00
		$48,988.00
Total Expenses		41,160.74
Administrative & Arboretum Equipment		9,709.63
Library Books & Prints		6,458.40
Cash on Hand and in Bank		9,870.98
Total Assets and Net Worth		26,039.01

Foundation's Membership:

Membership as of June 30, 1951, as follows:

Annual Associate	67
Annual	151
Annual Contributing	32
Annual Sustaining	3
Life	11
Founder	2
	266

The total of 266 members is an increase of 110 over last year. 52 are garden club groups.

Flower Show Exhibits:

This year we have had an exceptionally fine collection of Eucalyptus species of five gallon size, which were used to advantage in educational exhibits, shown both at the International Flower Show, March 3 to 11, and at the Pasadena Flower Show held April 12th to 15th.

An exhibit of materials grown at the Arboretum were displayed at the San Gabriel Branch of the American Begonia Society flower show held in Arcadia on August 12, 1950.

A garden tour, sponsored by the Foundation, ably planned and directed by Mrs. William D. Shearer, was held on February 16, 17, and 18, 1951. The following people very generously opened their gardens for this event:

Mr. & Mrs. Manchester Boddy, Descanso Gardens, La Cañada.
Mrs. Edward R. Valentine, San Marino
Mr. & Mrs. John E. Marble, South Pasadena
Mr. & Mrs. E. C. Tapfer, San Marino
Mrs. Franklin Booth, Pasadena
Mr. Morris B. Miller, Pasadena

The following garden clubs assisted Mrs. Shearer in conducting the Foundation's garden tour:

Altadena Garden Club
Altadena Foothill Garden Club
Chevy Chase Garden Club
The Diggers Garden Club
Forty Planners
Garden Section of College Women's Club
Inter County Garden Club
Las Jardineras
The Little Garden Club of Pasadena
Northwest Garden Club
Pasadena Garden Club
Seeders & Weeders
South Pasadena Garden Club
San Marino Garden Club
The Tillers

Displays:

A representative collection of flower paintings from the Charles and Josephine Broughton memorial collection of flower paintings and plant illustrations was shown to the public on two occasions under the auspices of the membership committee of the Foundation.

On January 28, 1951, the showing was held at the Barbour Clubhouse in Arcadia. We are greatly indebted to Mrs. Margaret Barbour for her kind donation of the use of the Clubhouse, and her personal assistance in carrying on the showing.

Through the courtesy of Mr. and Mrs. Clarence Gustlin, 114 Freemont Place, Los Angeles, who donated their fine private gallery, the membership committee sponsored a showing of the Broughton flower paintings on March 2.

A selected group of the Broughton paintings were displayed at Bamico's anniversary celebration on March 3rd and 4th.

Group Tours of the Arboretum:

The Los Angeles State and County Arboretum grounds were officially closed to the public June 3, 1950. This was deemed necessary to protect the public against accidents while dangerous work was in progress. This measure also speeded up the work going on.

For a short period this year, the work schedule made it possible to conduct, for educational purposes, groups making special arrangements to tour the Arboretum grounds.

These groups were Garden Clubs, School Classes from grade schools, high schools and colleges; art classes; Boy Scouts, Girl Scouts, Cub Scouts, Brownies, Blue Bird Girls, etc.; 24 groups arranged for a conducted tour of the Arboretum.

Volunteer Workers:

The Trustees of the Foundation and the Director of the Arboretum wish to make special mention of those who have so willingly given of their personal time to help the Arboretum with special projects.

Mrs. Anson C. Moore has spent many mornings at the Arboretum, devoted to masking and backing the many unmounted paintings of the Charles and Josephine Broughton memorial collection of flower paintings and plant illustrations. Besides this, Mrs. Moore has started making herbarium specimens of flowering plant materials growing at the Arboretum.

Mr. W. Dan Quattlebaum has been of great assistance in aiding with the control and eradication of noxious weeds on the Arboretum grounds.

Mr. and Mrs. Harry E. Bergstrom of San Marino have been working on the Arboretum scrap-book of publicity and newspaper clippings.

Mrs. Ruth F. Spalding analyzed and prepared a Compilation of Temperature data.

Movie Studios:

During the past year the Arboretum grounds were used by five studios, namely: Columbia, Lesser, Monogram, Nufeld, and Warner Brothers, for shooting scenes to be used in six of their forthcoming pictures.

Radio & Television Publicity:

Dr. Russell J. Seibert, Director of the Arboretum, has been interviewed on two radio programs and one television show, for publicity purposes concerning the Arboretum.

Talks:

During the past year 28 talks were given by members of the Arboretum staff. Of these talks Dr. Seibert gave 17; Mr. Spalding 12; and Mr. Nelson 4. All of these talks were given to groups who had expressed an interest in the Arboretum, and explained the objectives of the Arboretum as well as giving some of the historical background and plans for the future.

Publications:

LASCA LEAVES, a quarterly publication of the Foundation was started in October, 1950.

News Letter—August 1950 and December 1950.

News Releases—Twelve from July 1, 1950 to June 30, 1951.

Exchange Publications:

We have established exchange relations with 59 institutions to date, 34 of which are in the United States and 25 in foreign countries including:

Australia
Argentina
Bolivia
Brazil
Canada
Czechoslovakia
Colombia
Costa Rica
Cuba
Ecuador
Honduras
Italy
Indonesia
Mexico
New Zealand
Puerto Rico
Scotland

Gifts of Plants and Seeds Received by the Arboretum:

Valuable contributions of seeds and plants have been received from the following individuals, organizations and institutions:

Anderson, Edwin
Arendsee, Mr. D. G.
Ayres, Samuel Jr., Dr.
Bergstrom, Harry E.
Bernhardt, A. A., Dr.
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Carpenter, Earl
Condit, I. J., Dr.
Constance, Lincoln, Dr.
Darwin, Larry
Davis, Mrs. Mildred
Fawcett, E. J.
Ferryra, Ramon, Dr., through Edwin Anderson
Fowler, R.
Gravel, Lawrence W.
Harris, O. D.
Hottes, Alfred C.
Howard, James
Imle, Ernest P., Dr., Costa Rica
Kennedy, F. E.
Long, F. R.
Lorenz, Elmer
Lux, G. P., Dr.
McGah, J. T.
Macfarland, Mr. John C.
Menninger, Mr. E. W.
Moore, Mr. & Mrs. Albert
Nelson, Dewey E.
Nolan, Mrs. Gladys
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Scoville, Mrs. C. B.
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Shearer, Mrs. William D.
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Spalding, George H.
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American Plant Life Society
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Coolidge Rare Plant Gardens
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Evans & Reeves
Hagen's Nursery
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Howard Johnson Nursery
Los Angeles County Nursery
Oakhurst Gardens
San Diego City Nursery
South Gate Garden Club
U S D A Federal Experiment Station, Mayaguez, P. R.
U S D A Plant Introduction Station, Beltsville, Md.
U S D A Rubber Station, Turrialba, Costa Rica
U S D A Soil Conservation Department
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Huntington Botanical Garden
Melbourne Botanic Gardens, Australia
Missouri Botanic Gardens
Morton Arboretum, Lisle, Ill.

National Botanic Gardens, Kirstenbosch, South Africa
New York Botanical Garden
Santa Ana Botanic Gardens
Stribing Arboretum, Golden Gate Park
University of California at Berkeley
University of California at Los Angeles Botany Department
University of Washington Arboretum
Villa Taranto, Italy

Library Gifts:

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2 books, 123 pamphlets
Bomhard, Dr. Miriam L.
1 book
Brand, Donald D.
4 author's reprints
Buck, W. Quinn
15 periodicals
Cook, Mrs. William M.
6 books, 18 periodicals
Cramer, Prof. P. J. S.
4 author's reprints
Davis, Mrs. Mildred
33 misc periodicals
Delkin, A. C.
2 periodicals
Evans, Hugh
12 South African periodicals
Evans & Reeves Nursery
Monthly publ., "The Grapevine"
Fawcett, Jack
"Desert Magazine," 1950 complete and current
Fosberg, Dr. F. R.
19 pamphlets, author's reprints
Foster, Mulford B.
1 book, 4 pamphlets
Giridlian, J. M.
1 set "Ferns: British and Exotic," 8 vols., and 2 books
Gray, Miss Dorothy
2 issues "The Fuchsian"
Hagen, Willard
69 periodicals, 54 plant catalogs
Hoak, Charlotte
100 periodicals
Hodge, W. H.
1 book
Howgate, James
National Herbarium "Contributions" 5
Hutchison, Paul
1 book
Kruckeberg, Arthur W. (Kruckeberg Press)
82 books, 177 pamphlets
Lux, Dr. G. P.
5 books, U. S. D. A. Plant Introd. file
Mathias, Dr. Mildred
43 misc. publs., pamphlets
Munz, Dr. Philip A.
Union List of Botanical Books and Periodicals in Southern California
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10 reprints
Quattlebaum, W. Dan
1 set "Birds of California," 2 books, 1 pamphlet
Rancho Santa Ana Botanical Garden
"El Aliso," Vol. 2, No. 3
Sauer, Dr. Jonathan
Author's thesis "The Grain Amaranths"
Seibert, Dr. Russell J.
1 book, 150 misc. papers & pamphlets
Smithsonian Institution
National Herbarium "Contributions" 14
Spalding, George H.
60 plus periodicals
Thorpe, Mr. C. H.
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Traub, H. P.
13 reprints, pamphlets
University of California
34 papers, pamphlets
U. S. Forestry Service
(See Bomhard, Dr. M. L.)
Verdoorn, Dr. Frans
55 books, 271 pamphlets
Walker, Winslow M.
3 pamphlets
Went, Dr. F. W.
1 set "Science" and misc. journals
Wright, Mrs. Janet
Full set "The Herb Grower Magazine" to date

Miscellaneous Gifts Received by the Arboretum During the Past Year (exclusive of money donations):

Automobile Club of Southern California
3000 maps for garden tour
Harry Sims Bent
Frontice-piece drawing of LASCA Master Plan
Mrs. Ross K. Boore
Collection of 391 water color sketches and pen and ink drawings by the late Charles Broughton; a self portrait of Mr. Broughton. This collection is designated as the Charles and Josephine Broughton Memorial Collection.
Henry Dakin and Bob Fonda
Donated time painting trees, also two cans of paint and two brushes.
Mrs. Richard Y. Dakin
Picture frame.
Griswald & Winters Duplicating Equipment Co.
500 lithoprints of the Master Plan
Kruckeberg Press
6000 tickets for Garden Tour
Red Star Fertilizer Company
25 sacks of fertilizer
Mrs. Mira Saunders
Photographs of papaya trees
Dr. Russell J. Seibert
1 zinc cut, California Pepper Tree
Mr. Ellis Smith, County of Los Angeles
Photographs of Arboretum

National Botanic Gardens, Kirstenbosch, South Africa
New York Botanical Garden
Santa Ana Botanic Gardens
Stribing Arboretum, Golden Gate Park
University of California at Berkeley
University of California at Los Angeles Botany Department
University of Washington Arboretum
Villa Taranto, Italy

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Spalding, George H.
60 plus periodicals
Thorpe, Mr. C. H.
12 books
Traub, H. P.
13 reprints, pamphlets
University of California
34 papers, pamphlets
U. S. Forestry Service
(See Bomhard, Dr. M. L.)
Verdoorn, Dr. Frans
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Red Star Fertilizer Company
25 sacks of fertilizer
Mrs. Mira Saunders
Photographs of papaya trees
Dr. Russell J. Seibert
1 zinc cut, California Pepper Tree
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Checks should be made payable to the California Arboretum Foundation, Inc., and sent to our headquarters at 291 North Old Ranch Road, Arcadia, Calif. Phone DOuglas 7-3444.

Donations for Historical Restorations should be made payable to California Arboretum Foundation, Inc., Historical Fund.

The Los Angeles State and County Arboretum is operated by California Arboretum Foundation, Inc., a non-profit corporation. The Foundation is developing and managing the Arboretum under an agreement with the Los Angeles County Board of Supervisors. Title to the 120 acres of property is in the State of California, which has leased it to Los Angeles County for fifty years.

Construction operations are actively commenced by the County of Los Angeles in accordance with the master plan of the Foundation. Because of safety hazards the Arboretum is closed to the public during construction.

Operated By
California Arboretum Foundation, Inc.

MISSOURI BOTANICAL GARDEN
RECEIVED
JAN 16 1952
LIBRARY

Lasca Leaves

Phoenix dactylifera L.

WINTER 1952

PUBLICATION OF THE LASCA LEAVES ARCADIA · CALIFORNIA
QUARTERLY JOURNAL · CALIFORNIA

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LASCA LEAVES

Quarterly Journal of the

LOS ANGELES STATE *and* COUNTY ARBORETUM

A CALIFORNIA ARBORETUM FOUNDATION, INC. PUBLICATION

R. J. SEIBERT, *Editor*

VOL. II JANUARY, 1952 No. 1

DATE PALMS IN CALIFORNIA

ROY W. NIXON

U. S. Department of Agriculture, Indio, California

The first date palms, *Phoenix dactylifera* L., in California were grown from seeds planted by the founders of the early missions. One of these near the site of the first mission established in California, at San Diego in 1769, still survives in 1951, thanks to the protective care that has been given it. This is believed to be the oldest date palm in California, if not in the entire United States. Date seeds were also planted at other missions along the coast; and the palms grown from them, their number gradually diminishing through the years, have been rather striking landmarks during past decades, but their fruit has never attracted much attention because in the damp coastal climate it does not reach maturity.

In the period following the gold rush a few date seeds were planted here and there in the warm interior valleys and in time the fruiting of occasional palms suggested possibilities for date culture in these districts. One of the first demonstrations of fruit production from such plantings was at Winters, Calif., in the foothills west of Davis, in the Sacramento Valley, where several palms grown from seed planted by J. R. Wolfskill in 1857 were bearing edible fruit in 1877.

William Wolfskill, who owned the property that is now the site of the Los Angeles State and County Arboretum during the period 1865-72, was a brother of J. R. Wolfskill and had been associated with him in the development of the family property in northern California prior to coming to southern California. It is at least likely, therefore, that William Wolfskill can be given credit for the date palms which add a tropical atmosphere to some of the plantings on the grounds of the arboretum. The old date palm which leans over the water at the edge of the lake near the Reid adobe appears vaguely as a young palm in a photo taken in the 1880's and it was then about the size which would fit this theory. In later years, unfavorable growing conditions—crowding, shading, and neglect—have retarded the growth of these date palms.

The date palm is a monocotyledon, dioecious, extremely variable when grown from seed, and it cannot be budded or grafted. The only way of propagating varieties is by means of offshoots, or suckers, which are produced in the axils of the leaves, mostly near the base of the palm during the early years of its life. The possibility of introducing good varieties by means of offshoots from the date-growing regions of the Old World occurred to some interested horticulturists from time to time. According to W. T. Swingle, this was first attempted by Gen. Charles P. Stone in 1876. While on an official assignment in Egypt he sent a few offshoots of varieties grown there to southern California, where they "lived and grew, but unfortunately were afterwards allowed to die through the neglect of property owners."

In 1890 the U. S. Department of Agriculture arranged through correspondence for a small importation of offshoots from Algeria, Egypt, and Maskat, Arabia, and sent a few specimens to the California State experiment stations at Tulare and Pomona, to the Southern Pacific Railroad Co. at Indio, and to F. A. Kimball at National

City. Two known specimens of this importation survive in California, both in Coachella Valley. All the palms in the 1890 importation, however, proved to be seedlings or inferior varieties. None of the best varieties from the Old World were obtained until 1900 when W. T. Swingle, of the U. S. Department of Agriculture, made an importation of offshoots of Deglet Noor and a few other varieties from Algeria. During the next few years other plant explorers of the U. S. Department of Agriculture collected offshoots of promising varieties in all the more important date-growing countries of the Old World. Most of these offshoots were planted in the Salt River Valley of Arizona, but a few specimens were sent to California and some were later transferred to the U. S. Department of Agriculture experiment stations established in Coachella Valley at Mecca in 1904 and at Indio in 1907.

Meanwhile a few pioneers in the Coachella Valley became interested in the possibilities of date culture. One of these, Bernard Johnson, went to Algeria and made the first commercial importation of date offshoots, mostly of the Deglet Noor variety, which he planted near Mecca, Calif., in October 1903. During the next two decades Johnson and others made several large commercial importations of offshoots from Algeria, Egypt, and Iraq. Gradually a new industry developed. In 1950 there were 5,114 acres of dates in California, of which 4,841 were in Riverside County. In one small district, the Coachella Valley, there are about 80% of all the date palms and 90% of the total date production in the United States.

In the United States the Salton Basin affords the nearest approach to the climatic conditions under which dates have been found to do best in the Old World. For satisfactory commercial fruit production a long, hot growing season and a rainless period immediately before and during ripening are necessary. However, date palms will grow in any tropical or subtropical climate where temperatures below 20° F. are not of frequent occurrence, and this covers not only the low interior valleys of California but most of the southern parts of the state except the higher mountainous districts. There are some seedling date palms scattered throughout most of this area. Even the earliest of the commercial imported varieties are seldom likely to mature fruit on the Pacific slope, but in some of the foothill districts like San Bernardino, Riverside, and El Cajon occasional extra early seedling date palms ripen fruit during seasons hotter and drier than usual. These dates are usually inferior to the best of the commercial varieties, but the fruit is nearly always much relished by the owners and it affords welcome variety in home gardens.

The date palm as an ornamental has been neglected in southern California. In background clumps or as occasional specimens strategically located, date palms give a distinct exotic touch to a landscape—a tropical atmosphere in a subtropical climate. Date palms are easily grown from seed and, except in the hot interior valleys, this is at present the cheapest and best way of obtaining plant material.

Few people are aware of the great range of variation in the characters of both fruit and foliage that are to be found among the different varieties of date palms throughout the world. In spite of the variation found among seedling dates, it is still true that they are more likely to resemble the parent variety than some other totally different variety. This suggests the possibility and the desirability of obtaining improved types through a program of selection and breeding. For this purpose it is important to plant seeds of as many different varieties as possible, provided they have desirable characters. The U. S. Date Garden at Indio, Calif., is interested in such a program for the purpose of developing improved varieties for fruit production. Through the cooperation of the Los Angeles State and County Arboretum and its members interested in testing out new plant material, this program can be extended to include plant characters of ornamental value. Any new type of date palm which may be originated can, of course, be propagated as a variety by means of its offshoots, or through its seed the desired characters may be reproduced in varying degrees and combinations. The possibilities are well worth exploring.

LUX ARBORETUM ANNEX

R. J. SEIBERT

November 30th of this year, California Arboretum Foundation, Inc., received an outstanding gift of 154 acres of land from Dr. George P. Lux of Clover-Crest, Monrovia. The land, located in the City of Monrovia, is situated in Clamshell Canyon, Clover Crest and Cloverleaf Canyon. The property is accessible from the U. S. Forest Service Clamshell road, and adjoins the Angeles National Forest. Along with the deed to the property, the Foundation has received the water rights of Dr. Lux. Water for the property comes from a series of unfailing springs which, even during this dry summer, have continued their unfailing yield of cold, clear, pure water.

Under the agreement between Dr. George P. Lux and California Arboretum Foundation, Inc., the main parts will be of interest.

1. Dr. Lux will be entitled to continue his residence on the property.

2. The Foundation has agreed to pay Dr. Lux the sum of $100.00 per month for life.

3. Dr. Lux shall have the right to continue growing and caring for such plants as he may desire.

4. The Foundation has the right to maintain and manage the property and has all rights to the plant materials growing thereon.

5. The property shall be devoted to the advancement of Horticultural Science, and shall be known as the Lux Arboretum Annex.

6. The property will at no time be thrown open to the general public, although this shall not prohibit the Foundation from giving its members and other persons or groups interested in the cultivation of plant life, the privilege of visiting the Lux Arboretum Annex from time to time for the purpose of inspecting and studying the plant and bird life growing thereon.

The Lux Arboretum Annex is in the frost-free foothill zone of the San Gabriel mountains. The grounds range in elevation from 900 to 1350 feet. Most of the land is in native vegetation. Clamshell Canyon is one of the few remaining foothill canyons in Los Angeles County left unchanged by man. Clothed in a luxuriant growth of native Oak, Maple, Sycamore and Laurel, it has been untouched by man or fire for 65 years and so it should remain for the present and future generations.

Approximately 10 acres has been terraced and irrigated. This portion having been devoted to Dr. Lux's hobby of 35 years standing during which time he has cultivated his horticultural and botanical collections, derived from many parts of the world. As a cooperative experimenter of the U. S. Department of Agriculture, Division of Plant Exploration and Introduction, Dr. Lux has been the recipient of well over 1100 foreign plant introductions, sent him by the government for trial in the Los Angeles area.

In addition to his valuable collection of rare government introductions, Dr. Lux has amassed such other plant collections as fruit trees, Amaryllis, Cacti, Iris, Oleanders, Bamboos, Epiphyllum, Pyracantha, etc. Many types of naturally drought resistant plants have demonstrated their abilities as such over Dr. Lux's 35 years of observations. The U. S. Forest Service has recognized the value of many of the plants Dr. Lux was able to furnish for their experimental replanting and erosion control work in the Angeles National Forest.

The Arboretum Foundation is extremely fortunate to have the Lux Arboretum Annex in conjunction with the Los Angeles State and County Arboretum in Arcadia:

1. The two properties are located only 5 miles from each other, making both places easily accessible to the Arboretum staff.

2. The plantings of rare plants on the Arboretum Annex will serve as a marvelous source of planting material for the display plantings on the Los Angeles State and County Aboretum grounds which will in the not too far distant future be open to the public.

3. The Lux property presents soil types differing from the Valley soils in Arcadia.

4. A frost-free area greatly widens the plant material which may be grown outdoors by the Arboretum, and which could not otherwise be grown under the colder conditions at the Los Angeles State and County Arboretum itself. This will permit the Arboretum to include in its program

such plants as are adaptable to other frost-free foothill areas of Los Angeles County.

5. The presence of relatively smog-free pockets on the Lux Arboretum Annex will widen the amount of knowledge through experimentation concerning smog tolerance of plants.

6. The Annex presents to the Arboretum a representative area, both hill and canyon, which is covered with native California vegetation typical of this region and unspoiled by man-made changes.

Until the Arboretum Foundation has fulfilled its obligations of developing the Los Angeles State and County Arboretum in Arcadia, and until such time as sufficient funds, and endowments are raised to secure the future of the Arboretum, it will not be possible to more than basically maintain the grounds and plantings on the Lux Arboretum Annex. It is hoped, however, that with this wonderful donation of land and plants that other far-seeing individuals might be prompted to financially secure the future of the Arboretum which can add so much to the beauty, the economy and the peaceful surroundings in Los Angeles County and Southern California.

TO THESE WE ARE INDEBTED

HUGH EVANS

It is to relatively few people that California is indebted for the vast wealth of exotic material we have in our parks and gardens. My own knowledge of the subject starts with the late Charles Abraham of San Francisco. Mr. Abraham was a native of Alsatia, coming to this country many years ago. He introduced to the state a number of plants from various parts of the globe, two which occur to me are *Bomarea Caldasiana* and that beautiful white flowered climber from New Caledonia, *Orera Pulchella*, a noble vine too seldom encountered. He could not be said to "suffer fools gladly," yet if you were his friend, it was difficult to get him to accept any money for his plants. He would press them on you, till you felt you were in need of a burro. In this connection Dr. Charles Butterfield, of the University of California at Berkeley, has information on the subject of plant introductions extending back I think to the 1850's.

In 1893 Dr. Francesco Franceschi arrived in Los Angeles from Italy. Dr. Franceschi was a member of an old and well connected Italian family, and possessed a vast fund of horticultural knowledge. In 1894 he moved to Santa Barbara, and not long afterwards started an experimental garden there, reaching out into every quarter of the world for new plants, both useful and ornamental. It is to the late Dr. Franceschi that we owe a great number of our exotic plants. He was a delightful man to know and those horticulturists who had the opportunity of meeting and knowing him were indeed fortunate. In 1913 the Italian government induced Dr. Franceschi to go to Libya in Africa, to undertake similar operation. Among hundreds of his introductions, here are a few of the best:

Acacia obliqua
Acacia podalyraefolia
Bauhinia grandiflora
Bauhinia tomentosa
Bocconia frutescens
Cissus capensis
Dombeya natalensis
Feijoa sollowiana
Genista monosperma
Harpephyllum caffrum
Lippia repens
Metrosideros tomentosa
Pittosporum heterophyllum
Pittosporum rhombifolium
Pittosporum viridiflorum
Myaporum acuminatum
Schinus terebinthifolius
Schotia latifolia
Stigmaphyllon littorale
Taxodium mucronatum
Tipuana tipu

Mr. Peter Riedel, with whom Dr. Franceschi was associated in the introduction of plants, is still living and teaching classes on the old Franceschi home, where many of the original trees and shrubs may still be seen. It is always a pleasure to be in the society of Mr. Riedel who is full of valuable and interesting information and as full of enthusiasm as a young man.

There have been many fine and meritorious plants brought in from all over the world by Mr. Eric Walther of Golden Gate Park, San Francisco. Mr. Walther then, whom there is a no more informed and enthusiastic horticulturist in the country, has literally scoured the universe for new material and is still doing so. Virtually all of his introductions are things of beauty in the park today. Among the best of his introductions, most of them according to Mr. Walther before 1925, are the following:

Abelia floribunda
Buddleja salvifolia
Camellia reticulata
Cistus purpureus
Clethra arborea
Crinodendron Patagua
Escallonia organensis
Fuchsia cinnabarina (*Syn. F. reflexa*)
Hoheria populnea var. Osbornii
Leptospermum scoparium var. flore-plenum
Leptospermum scoparium var. Keatleyi
Magnolia Campbellii
Nothopanax laetum
Pseudopanax Lessonii
Rhododendron "Betty Wormald"
Rhododendron Fosterianum
Rhododendron "Gill's Triumph"
Rhododendron Nuttallii
Tristania laurina
Veronica (Hebe) "Autumn Glory"

Mr. Walther has charge of the botanical garden (Strybing Arboretum) in Golden Gate Park and was largely instrumental in getting this fine garden started. Mr. Walther was particularly fortunate in having for many years as his chief that grand old horticulturist, Mr. John MacLaren, who created Golden Gate Park. With such a man as John MacLaren at the head of the park, seconded by Eric Walther, the business of introducing new plants met with no let-up or hindrance.

In another article, unless the readers are weary of the subject, as they should not be, I hope to mention a few more individuals who are entitled to praise and recognition for their labors.

THE HOLE PROBLEM

R. J. SEIBERT

Any lover of trees, sooner or later, becomes a planter of trees. Those of us who plant an occasional tree in our yard find the actual mechanics of planting to be fun, relaxation and good clean exercise. To the large scale planter, be he hobbyist, orchardist, a member of civic or governmental tree planting programs, a commercial landscaper or nurseryman—yes, and anyone at the Arboretum—soon finds that the proper digging of those holes in which to plant the trees or shrubs becomes hard work and an expensive item.

This past August after transplanting eleven palms at the Arboretum, it was perfectly evident that something had to be done about the hole problem. It took two men a day and a half to dig eleven holes in our hard, dry, sun-baked "adobe brick" soil. Shovels could scarcely scratch the soil and picks barely made an impression. The clods which did break loose were so hard it took a sledge to pulverize them. Water was repelled as if off a duck's back. Such is the experience of the adobe dirt farmer in midsummer.

Mechanical hole diggers were investigated, of which a variety is available for a variety of uses and conditions. The type chosen to fit both our limited budget and the largest number of conditions at the Arboretum consisted of an attachment for our tractor, operating in connection with the hydraulic lift, completely manageable by one man, and digging a hole twenty-four inches in diameter up to thirty-six inches in depth.

A variety of auger sizes is available for this attachment, should the need arise. A safety shear pin arrangement is present, which prevents damage to the equipment in the event of hitting a stone or root. As has been demonstrated to our relief the shear pin breaks, leaving water pipes undamaged in the event one happens to be placed where one felt it should not exist.

Our holing attachment has shown itself to produce the goods with relative ease even in our hardest and driest adobe. There are several advantages in these mechanically dug holes which cannot be reproduced easily by a pick and shovel. The soil is uniformly pulverized leaving a complete absence of large chunks and hard clods. This means that back-filling with easily manageable soil of uniform packing quality is possible. The soil removed from the hole is uniformly distributed around the entire hole so that if one back fills with surrounding top soil the excavated material remains as a perfect basin around the base of the tree without further adieu. The twenty-four inch diameter hole may seem large for a gallon sized plant, or even a five gallon size. The depth is easily regulated by the hydraulic lift depending on the needs, while the large diameter allows for much better planting and growing conditions of the newly planted plants than is possible when the planting hole is too small.

A brief study of the economics involved in mechanically digging holes compared with hand digging reveals an interesting comparison. Test runs in hard adobe soil showed that forty holes could be dug per hour with our hole digging attachment.

Under the same heavy soil conditions one man did well to average six holes of ample size for five gallon plants per hour of sustained digging.

The operating cost of a tractor with its attachment including cost of operator, fuel, depreciation, insurance, etc., is about four dollars ($4.00) per hour. This makes the cost of mechanically digging the holes at about ten cents per hole. When dug by hand ample sized holes in hard soil will average at least twenty-five cents per hole.

We consider a minimum saving of fifteen cents per hole by using our hole digging attachment. This means that the attachment has completely paid for itself after digging twenty-three hundred holes, or after eight days of consistent holing operations.

We shall be digging some twelve thousand holes at the Arboretum in the next few years with this attachment. It will not only pay for itself but will pay for the cost of the tractor as well, and still leave the tractor available for discing, mowing and the many other uses to which it is put at the Arboretum.

GROWING NOTES
SOUTH AFRICAN PLANTS

GEORGE H. SPALDING

South Africa and Australia are two of the areas of the world which offer much in the way of plants that should be suitable for cultivation in Southern California. We have already discussed briefly (Lasca Leaves, Vol. I, No. 2) some of the plants Australia has to offer. Now let us take a look at Africa.

Within the Union of South Africa there are many combinations of climatic conditions and a considerable variety of soils. As we would expect, this creates an immense and varied flora. For the purposes of this article, South Africa can be divided roughly into two areas according to the rainfall each receives: that section which has winter rainfall (the western and southwestern section and parts of the Karroo); and the summer rainfall area, which includes a large portion of the balance of South Africa. There are a few areas which have heavy rainfall, Kirstenbosch for example, and these localities usually receive rain every month in the year. Since some of the plants which we grow come from these areas, this factor must be taken into consideration. In general the plants native to the winter rainfall area should be more suitable for cultivation in Southern California than those from the summer rainfall area.

In the Cape Peninsula area, alone, approximately three thousand species of plants have been described as indigenous. Considering the large area covered by the Union of South Africa, some idea may be gained of the vast number of plants obtainable there. It is very difficult to give any general cultural information that would be applicable to South African plants as a whole. For example, most plants in the family *Proteaceae* require excellent drainage, and soil which is on the acid side. One the other hand, *Gladiolus*, while it does best in a sandy loam, would not do at all well in soil as open as that necessary for the *Proteaceae*. Some South African plants are very intolerant of artificial fertilizers, while others, *Gladiolus* for example, is very tolerant and it is beneficial when used in proper amounts. It seems logical that many South African plants would grow well under the same conditions required by many of our California native plants, particularly those from the winter rainfall areas where similar conditions of a definite wet and dry season exist. The above indicates how much we have to learn about the cultivation of South African plants in Southern California. From the succeeding paragraphs you will see how many new and interesting plants have yet to be introduced for our use and enjoyment.

Honors for the most spectacular group of flowering plants in South Africa would probably have to be divided among the Proteas, Aloes, and that group of several genera known collectively as the Mesembryanthemums. Conversation with people who have vistied that country always brings mention of these three groups as being outstanding and spectacular. Therefore, any list of South African plants can well start with these three groups.

The family *Proteaceae* is composed of shrubs and trees and a very few herbs, with shrubs forming by far the largest part. Information concerning the cultivation of this group of plants is quite sketchy, and what is available is widely scattered in various publications. Most of it has been written for South African conditions, or tells of the attempts which have been made to grow this plant group in Great

Britain. Unfortunately, most of this information is not applicable to Southern California conditions. The only definite information we have is that most proteaceous plants need a coarse, well-drained soil which is on the acid side. It is probably questionable whether commercial fertilizers or fresh manures should be used. In their native habitat many grow in what appears to be poor, rocky soil. In the past this had led growers to believe that poor soil was essential. It is this writer's opinion that at least some of the species will do well with plenty of humus provided the location is well drained and the texture of the soil is coarse and open. At the Arboretum we are going to try to grow as many species of this group as possible, and we will be continually experimenting with soil mixtures, and exposure. Any concrete results will be reported in Lasca Leaves after they have been thoroughly substantiated.

In this country we grow several Australian members of the *Protea* family, *Grevillea* and *Hakea*, which are very striking plants. The South African members of the family are practically unknown except for *Leucadendron argenteum*, the beautiful Silver Tree. This tree has been very successfully grown on the Hope Ranch in Santa Barbara and there are scattered specimens in other parts of Southern California. Apparently it does best in the coastal areas where the atmosphere is moist. It is reported to be tender to frost. However, we can report with accuracy that a ten-year-old tree withstood twenty-five degrees at LaCanada during the winter of 1949. This tree is often short lived here, and we are informed that this is also true in South Africa.

The genera *Protea* and *Leucospermum* are mostly shrubs varying in height from one or two feet to four of five feet. In color they run from whtie through pink to red. Among them are some of the most spectacular flowering shrubs in the world. So far as we know, with the exception of one fairly sizeable collection on a private estate near Berkeley, California, and one or two species at Strybing Arboretum in Golden Gate Park, San Francisco, none of the many species in these two genera is grown in this country. It is to be hoped that the difficulties faced in growing this group can be overcome so that our gardens and parks may be enriched by them.

The Aloes are beautiful on two counts, their flowers and the varied types of foliage, but beware the spines on the leaves. They run the gamut from a few inches high (*A. humilis*) to those which are practically small trees (*A. Bainesii* and *A. dichotoma*, twenty-five feet). All have fleshy leaves, some are striped or mottled in various shades of green, white, or reddish purple. Members of the lily family, they carry their flowers in spikes of bell-shaped florets resembling a candelabra and run from whitish, through yellow, orange, coral pink to flaming red. They provide good cut flowers. They are tender where temperatures go below twenty-five degrees for sustained periods but many of them grow exceedingly well when given a congenial location. Some *Aloes* are fast growing (e.g. *A. Bainesii)* which means soft growth. This is probably one reason for their susceptibility to frost. However, an interesting fact was called to our attention recently. In several cases of frost damage at the Huntington Botanical Gardens it was found that the stems froze but the leaves were undamaged. A matter of a few hours can make a difference. This might be a matter for the research scholar to consider. Again a gritty well drained soil, a sunny location, and not too much water during the summer is most ideal.

Mesembryanthemum was once a genus of about a thousand species. In recent years, botanists have re-defined this large group and broken it up into quite a large number of genera. Since changes are still being made, they will be considered collectively. "Mesems" run from tiny plants which resemble stones and are hard to detect in their native habitat, to shrubby forms two to three feet high. The showy-flowered kinds are very brilliant in shades of red, orange, yellow, pink and whitish yellow. The gaudy cerise "Ice Plant" is well known throughout a large part of Southern California. The Arboretum has recently received seed of some of the shrubby types which our source reports make very striking low hedges and edgings. We have high hopes that they will prove themselves here because they would be an outstanding addition to our landscape. What more could we ask for than a plant which is not too fussy as to soil, needs little water, and asks only for a hot sunny situation in which to live?

Another genus of plants which is well represented is *Erica*. The species of *Erica* found in South Africa range from herbs to small trees, but the majority are shrubby in nature. The family *Ericaceae* is third largest in number of indigenous species represented on the Cape Peninsula. Of this family, the genus *Erica* is represented by the largest number of species in the recently published "Flora of the Cape Peninsula" by Adamson and Salter. This book is highly recommended to anyone interested in South African flora. Over one hundred species and varieties of *Erica* are listed from that particular area alone. When we remember that on an ordinary wall map of South Africa the Cape is a minute protuberance, we begin to realize what a vast area South Africa really is.

At the Arboretum to date we have received seed of twenty-five species of *Erica*, the majority of them from South Africa. To the best of our knowledge, not more than one or two are generally available in nurseries. Since this group contains many flowering shrubs of outstanding beauty, it is to be regretted that so few are in cultivation in this country. The South African Heathers have been known for many years and the most probable reason for their not being more generally grown here is that they are considered difficult subjects to grow, plus the very important factor of the high alkalinity of our soils. We, at the Arboretum, intend to grow as large a collection of South African Heathers as possible; they will be grown under carefully controlled conditions to try and find out if any of the species will be adaptable to our area. Should some of them prove so, we can then undertake a program of hybridization aimed at developing a hardy floriferous strain well adapted to conditions in Southern California.

A family of plants well represented in South Africa is the *Compositae*. Members of this family range from creeping herbs to medium-size trees. However, the vast majortiy are herbaceous or sub-shrubby in nature. Too well known to need more than passing mention are *Gerbera*, various species of *Centaurea*, *Arctotis* (The African Daisy), *Dimorphotheca*, *Helichrysum* (Everlastings), *Senecio* and *Cineraria*, to mention but a few. The members of this large family are valuable for many garden uses and not a few are valuable florists' items for cut flowers or as potted plants. Many new species in several of the genera in this family have been received from various sources in South Africa, and we are happy to report that several of them are growing well. We should be able to report on them within the next year.

The *Leguminosae*, or pea family, is repprepented by some very beautiful shrubs and small trees. The flowers are usually in mauve, pink, or yellow. The Calpurnias are small trees or large shrubs with clusters of yellow flowers resembling a small yellow *Wisteria* or more nearly a *Laburnum*, the Golden Chain Tree. *C. sylvatica*, has bloomed for us when three feet high and a little over a year old, from seed. Several species of *Virgilia* are also being grown although none has bloomed to date.

The last group of plants to be mentioned are the Irids or the Iris family. No species of the genus *Iris* grows south of the equator. Their place is taken by *Moraea*, a related genus which closely resembles *Iris* in appearance. The various species range from one to six feet in height and have flowers in blue, lavender, white, and yellow. Some of them are attractively marked at the base of the petals. Also in this group is *Gladiolus*, too well known to need further mention; *Ixias* and *Sparaxis* in brilliant red shades so fine for naturalizing; *Freesia* in all colors of the rainbow and very fragrant; and *Watsonia* in shades of red, pink, lavender and white. There are many more fine bulbous plants in this family which are too little known in our gardens. Quite a few are available at nurseries or from specialists. Most of them are showy and worthwhile.

The fore-going remarks show that the South African flora can contribute many plants of value to the Southern California landscape. Trees for highway, park, and street planting, and most of them small enough to be very satisfactory in the small garden. Ground covers and soil binders which will give bright color in season and remain green the balance of the year. Hedge and border shrubs which can surpass in color and beauty many plants that we now use for these purposes. We hope this article will create an interest in and a desire to grow more of these interesting, beautiful plants on the part of Southern Californians, by the home gardeners, landscape architects or park superintendents.

In closing "Growing Notes" for this issue, I should like to leave a thought with you. Many writers seem to strive diligently to disguise any "message" they may wish to get across to their readers. Yours truly is not of this group. It has long been my feeling that many gardeners are far too easily discouraged from trying new or little known plants. This does not mean we should try to grow plants which obviously would not grow in our area.

For example, you would not try to grow *Bougainvillea* outdoors in Boston. On the other hand, do not be discouraged because your neighbor has not been successful with a plant. Soil and climatic conditions can vary considerably in even a small area. A few hundred feet can make a big difference. If you are interested in growing a plant and are told that it is a difficult subject or cannot be grown in your area, don't give up. Rather, check all information available on the plant: where it is native, the conditions under which it grows there, and under what conditions it has been tried in your locality. Then check to see if your garden has the same set of conditions under which it failed with others. Perhaps you will find that your soil is sandier or that you have better air drainage, or in some other way your garden may differ from the others. Should you find there are some differences, who can say that the plant will not do well for you? It is our sincere belief that if more people would follow this line of thought, the variety and interest in Southern California gardens would be tremendously increased.

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The Los Angeles State and County Arboretum is operated by California Arboretum Foundation, Inc., a non-profit corporation. The Foundation is developing and managing the Arboretum under an agreement with the Los Angeles County Board of Supervisors. Title to the 120 acres of property is in the State of California, which **has leased it to Los Angeles County for fifty years.**

Construction operations are actively commenced by the County of Los Angeles in accordance with the master plan of the Foundation. Because of safety hazards the Arboretum is closed to the public during construction. Interested clubs may arrange for group conducted tours of the grounds by calling the Arboretum Office, DOuglas 7-3444.

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Checks should be made payable to the California Arboretum Foundation, Inc., and sent to our headquarters at 291 North Old Ranch Road, Arcadia, Calif. Phone DOuglas 7-3444. Donations for Historical Restorations should be made payable to California Arboretum Foundation, Inc., Historical Fund.

The Los Angeles State and County Arboretum is operated by California Arboretum Foundation, Inc., a non-profit corporation. The Foundation is developing and managing the Arboretum under an agreement with the Los Angeles County Board of Supervisors. Title to the 120 acres of property is in the State of California, which has leased it to Los Angeles County for fifty years.

Construction operations are actively commenced by the County of Los Angeles in accordance with the master plan of the Foundation. Because of safety hazards the Arboretum is closed to the public during construction. Interested clubs may arrange for group conducted tours of the grounds by calling the Arboretum Office, DOuglas 7-3444.

LASCA LEAVES

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LOS ANGELES STATE and COUNTY ARBORETUM
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PLANTS SUITABLE FOR PARKING LOT PLANTINGS IN LOS ANGELES CIVIC CENTER AREA

PREPARED BY
STAFF OF LOS ANGELES STATE AND COUNTY ARBORETUM

With acknowledgment to the following collaborators:
Philip E. Chandler — Dr. Mildred Mathias
Mildred Davis — Peggy Sullivan
Donald P. Woolley

SPECIES	COMMON NAME	PLANT TYPE										PLANT HEIGHT								
		Tree	Shrub	Herb	Vine	Evergreen	Half Deciduous	Deciduous	Conifer	Palm	Succulent	6"-1'	1'-2'	2'-5'	5'-10'	10'-20'	20'-30'	30'-40'	50'-60'	70' or over
Acacia baileyana	Bailey Acacia	X				X											X			
†Acacia podalyriaefolia	Pearl Acacia	X	X			X										X				
Acacia pruinosa	Frosty Wattle	X				X													X	
†Acacia pycnantha	Golden Wattle	X				X										X				
Acacia saligna	Golden Wreath Wattle	X				X										X				
†Acacia vestita	Hairy Wattle		X			X									X					
†Acokanthera spectabilis	Winter-sweet		X			X									X					
†Acokanthera venenata	Bushman's Poison		X			X									X					
Aeonium arboreum	Aeonium										X			X						
Ailanthus altissima	Tree of Heaven	X						X										X		
Arctotis acaulis (Hybrids)	Bushy Arctotis			X		X							X							
Baileya multiradiata	Desert Baileya			X									X							
*Bougainvillea "San Diego Red"	Bougainvillea				X	X										X				
Callistemon lanceolatus	Crimson Bottlebrush	X	X			X										X				
Cercis siliquastrum & spp.	Judas Tree	X						X									X			
*Chamaerops humilis	Hairpalm									X				X			X			
Chrysanthemum maximum "Marconi"	Shasta Daisy			X									X							
Cistus crispus	Wrinkleleaf Rockrose		X			X								X						
Clytostoma callistegioides	Violet Trumpetvine				X	X										X				
Crassula arborescens	Crassula										X				X					
Crassula argentea	Silver Crassula										X					X				
*Cupania anacardioides	Cupania	X				X											X			
Cupressus arizonica	Arizona Cypress								X									X		
†Dodonea viscosa	Giant Hop-bush		X			X									X					
†Dodonea viscosa purpurea	Purple Hop-bush		X			X									X					
Elaeagnus pungens	Silver berry		X			X								X						
Escallonia organensis	Organ Escallonia		X			X									X					
*Erythea edulis	Guadalupe Palm									X								X		
Eucalyptus camaldulensis (rostrata)	River Red Gum	X				X														X
*Eucalyptus citriodora	Lemon Scented Gum	X				X													X	X
Eucalyptus crucis	Silver Mallee	X	X			X										X				
*Eucalyptus leucoxylon rosea	Pink-flowered Whitewood	X				X													X	
*Eucalyptus macrandra	Longstamen Eucalyptus	X				X											X			
Eucalyptus polyanthemos	Redbox Eucalyptus	X				X													X	X
Eucalyptus pulverulenta	Silver Mountain Gum	X				X											X			
*Eucalyptus sideroxylon pallens	Pink-flowered Ironbark	X				X												X		
*Ficus (nitida) retusa	Indialaurel Ficus	X	X			X												X		
Ficus pumila	Climbing Fig				X	X										X				
Gazania (Mixed Hybrids)	Gazania			X								X								
*Ginkgo biloba (Male, fastigiate form)	Maidenhair Tree	X						X	X										X	X
Hemerocallis (Evergreen Species)	Daylily			X		X							X							
Lantana sellowiana	Trailing Lantana				X	X								X						
Leptospermum laevigatum	Australian Teatree	X	X			X											X			
Libocedrus decurrens	Incense Cedar								X											X
*Limonium Perezii	Perez Statice			X		X							X							
Magnolia grandiflora	Bullbay	X				X												X	X	
Melaleuca leucadendron	Cajeput Tree	X				X												X		
Melaleuca styphelioides	Prickly Paperbark	X				X											X			
Melia Azederach umbraculiformis	Umbrella Chinaberry	X						X										X		
Nerium oleander	Oleander	X	X			X										X				
Opuntia (Spineless forms)	Tuna										X			X	X	X				
†*Pandorea pandorana	Wongavine				X	X										X				
Parkinsonia aculeata	Jerusalemthorn	X						X								X				
Phaedranthus buccinatorius	Bloodtrumpet				X	X										X				
*Phoenix dactylifera	Datepalm									X								X		
*Phormium tenax (all forms)	New Zealand Flax			X		X								X						
Pittosporum tobira	Tobira Pittosporum		X			X									X					
Pittosporum undulatum	California Mockorange	X				X											X		X	
Podocarpus elongatus	Fern Podocarpus	X				X			X								X			
*Prunus lyoni	Catalina Cherry	X	X			X											X			
Pyracantha (Select Varieties)	Firethorn		X			X									X					
Rosa "Mermaid"	Mermaid Rose				X	X										X				
Senecio angulatus	Senecio		X		X	X					X				X		X			
Spartium junceum	Spanish Broom		X			X									X					
Solanum jasminoides	White Potato Vine				X	X										X				
Tecomaria capensis	Cape Honeysuckle		X		X	X	X									X				
*Trachycarpus fortunei	Windmill Palm									X							X			
*Washingtonia robusta	Mexican Fanpalm									X										X
*Xylosma senticosa	Shiny Xylosma		X			X									X					
Yucca elephantipes	Glossy Yucca	X				X											X			
Yucca spp.	Yucca	X	X			X								X	X	X	X			

SPECIES	GROWTH HABIT									FOLIAGE COLOR						
	Spreading	Round-Topped	Pyramidal	Slender	Dense	Open	Sparse	Pendulous	Weeping	Light Green	Medium Green	Dark Green	Gray	Blue	Bronze	Purple
Acacia baileyana	X				X					X			X	X		
†Acacia podalyriaefolia		X											X			
Acacia pruinosa	X				X					X						
†Acacia pycnantha	X									X						
Acacia saligna								X			X					
†Acacia vestita	X								X	X			X			
†Acokanthera spectabilis	X				X	X						X			X	
†Acokanthera venenata	X					X						X			X	
Aeonium arboreum				X			X				X					X
Ailanthus altissima	X			X		X					X					
Arctotis acaulis (Hybrids)	X				X					X			X			
Baileya multiradiata	X					X							X			
*Bougainvillea "San Diego Red"	X				X				X			X				
Callistemon lanceolatus				X						X					X	
Cercis siliquastrum & spp.	X					X					X					
*Chamaerops humilis				X								X				
Chrysanthemum maximum "Marconi"	X											X				
Cistus crispus		X			X	X					X					
Clytostoma callistegioides	X				X	X					X					
Crassula arborescens					X					X	X					
Crassula argentea					X					X	X					
*Cupania anacardioides		X			X							X				
Cupressus arizonica			X			X				X				X	X	
†Dodonea viscosa		X								X	X					
†Dodonea viscosa purpurea		X													X	X
Elaeagnus pungens	X				X					X			X			
Escallonia organensis	X				X						X	X			X	
*Erythea edulis				X							X					
Eucalyptus camaldulensis (rostrata)	X					X					X					
*Eucalyptus citriodora	X			X		X				X						
Eucalyptus crucis	X					X							X	X		
*Eucalyptus leucoxylon rosea	X							X		X			X			
*Eucalyptus macrandra				X		X				X	X		X			
Eucalyptus polyanthemos	X					X		X		X			X			
Eucalyptus pulverulenta	X					X							X	X		
*Eucalyptus sideroxylon pallens	X							X			X				X	
*Ficus (nitida) retusa		X			X						X	X				
Ficus pumila	X				X							X			X	
Gazania (Mixed Hybrids)	X										X	X				
*Ginkgo biloba (Male, fastigiate form)	X			X		X				X						
Hemerocallis (Evergreen Species)					X						X					
Lantana sellowiana	X				X						X					X
Leptospermum laevigatum	X							X		X			X			
Libocedrus decurrens			X									X				
*Limonium Perezii						X				X	X					
Magnolia grandiflora	X		X		X							X			X	
Melaleuca leucadendron			X		X					X	X		X		X	
Melaleuca styphelioides		X										X				
Melia Azederach umbraculiformis		X			X							X				
Nerium oleander	X				X							X				
Opuntia (Spineless forms)	X					X				X						
†*Pandorea pandorana	X											X				
Parkinsonia aculeata	X						X			X						
Phaedranthus buccinatorius	X					X					X	X				
*Phoenix dactylifera				X							X	X				
*Phormium tenax (all forms)	X				X					X	X				X	X
Pittosporum tobira		X			X							X				
Pittosporum undulatum	X	X			X					X	X	X				
Podocarpus elongatus	X			X	X			X				X				
*Prunus lyoni	X		X		X						X	X				
Pyracantha (Select Varieties)	X				X						X	X				
Rosa "Mermaid"	X				X					X	X	X				
Senecio angulatus	X				X				X		X	X				
Spartium junceum		X					X				X					
Solanum jasminoides	X					X					X					
Tecomaria capensis	X				X	X			X		X					
*Trachycarpus fortunei				X								X				
*Washingtonia robusta				X						X						
*Xylosma senticosa	X				X					X					X	
Yucca elephantipes								X			X					
Yucca spp.	X			X		X					X	X	X			

SPECIES	FLOWER COLOR									FLOWER TIME				
	White	Cream	Yellow	Pink	Red	Orange	Blue	Lavender	Purple	Spring	Summer	Autumn	Winter	Intermittent
Acacia baileyana			X										X	
†Acacia podalyriaefolia			X										X	
Acacia pruinosa		X	X								X	X		
†Acacia pycnantha			X							X				
Acacia saligna			X							X			X	
†Acacia vestita			X							X				
†Acokanthera spectabilis	X									X				
†Acokanthera venenata	X									X				
Aeonium arboreum			X										X	
Ailanthus altissima		X								X				
Arctotis acaulis (Hybrids)	X	X	X	X	X	X		X		X	X	X	X	
Baileya multiradiata			X								X	X		
*Bougainvillea "San Diego Red"					X						X	X	X	
Callistemon lanceolatus					X					X	X			
Cercis siliquastrum & spp.				X					X	X				
*Chamaerops humilis		X									X	X		
Chrysanthemum maximum "Marconi"	X									X	X	X		
Cistus crispus				X				X	X	X				X
Clytostoma callistegioides								X		X	X			
Crassula arborescens				X									X	
Crassula argentea	X			X									X	
*Cupania anacardioides		X								X			X	
Cupressus arizonica														
†Dodonea viscosa	X									X				
†Dodonea viscosa purpurea	X									X				
Elaeagnus pungens	X	X											X	X
Escallonia organensis	X			X						X	X	X		X
*Erythea edulis		X								X				
Eucalyptus camaldulensis (rostrata)	X									X				
*Eucalyptus citriodora	X										X			
Eucalyptus crucis	X									X				
*Eucalyptus leucoxylon rosea				X						X	X			
*Eucalyptus macrandra			X							X	X	X		X
Eucalyptus polyanthemos	X												X	
Eucalyptus pulverulenta	X										X			
*Eucalyptus sideroxylon pallens				X	X					X			X	X
*Ficus (nitida) retusa														
Ficus pumila														
Gazania (Mixed Hybrids)	X	X	X	X	X	X		X		X	X	X	X	
*Ginkgo biloba (Male, fastigiate form)														
Hemerocallis (Evergreen Species)			X							X	X	X	X	X
Lantana sellowiana				X				X		X	X	X		X
Leptospermum laevigatum	X									X				
Libocedrus decurrens														
*Limonium Perezii	X						X	X		X	X	X	X	
Magnolia grandiflora	X	X								X	X		X	X
Melaleuca leucadendron	X	X									X			
Melaleuca styphelioides	X									X				
Melia Azederach umbraculiformis								X	X	X				
Nerium oleander	X	X		X	X						X	X		
Opuntia (Spineless forms)			X								X			
†*Pandorea pandorana	X	X								X				
Parkinsonia aculeata			X								X	X		
Phaedranthus buccinatorius					X	X				X				
*Phoenix dactylifera										X				
*Phormium tenax (all forms)					X	X				X				
Pittosporum tobira	X	X								X			X	
Pittosporum undulatum	X	X								X	X			
Podocarpus elongatus										X			X	
*Prunus lyoni	X									X				
Pyracantha (Select Varieties)	X									X				
Rosa "Mermaid"		X	X							X	X	X	X	
Senecio angulatus			X							X	X	X	X	X
Spartium junceum			X							X	X			
Solanum jasminoides	X									X	X	X	X	
Tecomaria capensis					X	X				X	X	X	X	
*Trachycarpus fortunei		X	X								X	X	X	
*Washingtonia robusta		X	X											
*Xylosma senticosa		X										X		
Yucca elephantipes	X										X			
Yucca spp.	X	X								X	X			

SPECIES	GROWTH				FROST TOL.		IRRIGATION OF ESTABLISHED PLANTS				USEFUL LIFE			
	Slow	Moderate	Fast	Very fast	Resistant	Hardy	None	Monthly	Semi-monthly	Weekly	Short	Average	Prolonged	Posterity
Acacia baileyana			X	X		X	X	X			X			
†Acacia podalyriaefolia			X			X	X	X			X			
Acacia pruinosa			X			X		X				X		
†Acacia pycnantha			X			X		X	X		X			
Acacia saligna		X	X			X	X	X			X			
†Acacia vestita		X				X		X	X		X			
†Acokanthera spectabilis	X				X			X					X	
†Acokanthera venenata	X				X			X					X	
Aeonium arboreum		X			X				X			X		
Ailanthus altissima				X		X	X	X	X	X		X		
Arctotis acaulis (Hybrids)			X		X	X			X	X		X		
Baileya multiradiata			X			X	X				X			
*Bougainvillea "San Diego Red"		X	X		X			X	X				X	
Callistemon lanceolatus		X				X		X	X			X		
Cercis siliquastrum & spp.		X				X		X				X		
*Chamaerops humilis	X					X		X					X	
Chrysanthemum maximum "Marconi"			X			X				X	X			
Cistus crispus		X	X			X	X	X				X		
Clytostoma callistegioides		X				X			X			X		
Crassula arborescens		X				X	X	X				X		
Crassula argentea		X				X	X	X					X	
*Cupania anacardioides	X	X			X				X				X	
Cupressus arizonica		X				X	X	X	X			X		
†Dodonea viscosa		X				X		X				X		
†Dodonea viscosa purpurea		X				X		X				X		
Elaeagnus pungens	X					X	X	X				X		
Escallonia organensis			X		X				X			X		
*Erythea edulis	X					X	X	X						X
Eucalyptus camaldulensis (rostrata)			X			X	X	X				X		
*Eucalyptus citriodora			X			X		X				X	X	
Eucalyptus crucis			X			X		X				X		
*Eucalyptus leucoxylon rosea		X			X			X					X	
*Eucalyptus macrandra			X	X		X		X				X		
Eucalyptus polyanthemos		X				X	X	X	X			X		
Eucalyptus pulverulenta		X				X		X				X		
*Eucalyptus sideroxylon pallens		X				X		X				X		
*Ficus (nitida) retusa		X			X				X				X	
Ficus pumila	X		X			X	X	X					X	
Gazania (Mixed Hybrids)		X				X		X	X		X			
*Ginkgo biloba (Male, fastigiate form)	X					X		X						X
Hemerocallis (Evergreen Species)			X			X		X	X			X	X	
Lantana sellowiana			X		X				X	X		X		
Leptospermum laevigatum	X	X				X	X	X	X				X	
Libocedrus decurrens		X				X		X	X					X
*Limonium Perezii			X			X		X	X			X		
Magnolia grandiflora		X				X		X	X				X	X
Melaleuca leucadendron		X			X	X			X				X	
Melaleuca styphelioides	X	X			X	X			X			X		
Melia Azederach umbraculiformis			X			X		X			X			
Nerium oleander		X	X			X	X	X					X	
Opuntia (Spineless forms)		X				X	X	X				X		
†*Pandorea pandorana		X	X		X				X			X		
Parkinsonia aculeata		X				X	X	X				X		
Phaedranthus buccinatorius		X			X	X			X			X		
*Phoenix dactylifera	X					X	X	X					X	
*Phormium tenax (all forms)		X				X		X	X			X		
Pittosporum tobira	X					X		X					X	
Pittosporum undulatum		X	X			X		X	X				X	
Podocarpus elongatus	X	X				X		X	X	X			X	
*Prunus lyoni			X			X		X	X			X		
Pyracantha (Select Varieties)			X			X		X	X			X		
Rosa "Mermaid"			X			X				X		X		
Senecio angulatus			X			X			X	X		X		
Spartium junceum			X			X	X	X			X			
Solanum jasminoides			X			X				X		X		
Tecomaria capensis			X		X	X		X					X	
*Trachycarpus fortunei	X					X		X					X	
*Washingtonia robusta	X	X				X	X	X					X	X
*Xylosma senticosa		X			X	X		X	X			X		
Yucca elephantipes			X		X			X				X		
Yucca spp.	X	X				X	X	X				X	X	

SPECIES	PLANTING AREA (MIN. WIDTH)						PLANTING DISTANCE									
	1'-2'	2'-4'	4'-6'	6'-8'	8'-10'	10'-15'	Under 1'	1'-2'	2'-4'	4'-6'	6'-10'	10'-15'	15'-25'	30'	40'	50'
Acacia baileyana				X										X		
†Acacia podalyriaefolia			X									X				
Acacia pruinosa				X											X	
†Acacia pycnantha			X									X				
Acacia saligna			X										X			
†Acacia vestita			X								X					
†Acokanthera spectabilis			X								X					
†Acokanthera venenata			X							X	X					
Aeonium arboreum	X								X							
Ailanthus altissima			X										X			
Arctotis acaulis (Hybrids)	X							X	X							
Baileya multiradiata	X						X	X								
*Bougainvillea "San Diego Red"	X										X					
Callistemon lanceolatus				X								X				
Cercis siliquastrum & spp.				X									X			
*Chamaerops humilis			X								X					
Chrysanthemum maximum "Marconi"	X							X								
Cistus crispus		X							X	X						
Clytostoma callistegioides	X											X				
Crassula arborescens		X							X							
Crassula argentea		X							X							
*Cupania anacardioides				X									X			
Cupressus arizonica				X								X				
†Dodonea viscosa			X								X					
†Dodonea viscosa purpurea			X								X					
Elaeagnus pungens			X								X					
Escallonia organensis			X							X	X					
*Erythea edulis			X										X			
Eucalyptus camaldulensis (rostrata)						X									X	X
*Eucalyptus citriodora			X									X	X			
Eucalyptus crucis			X								X					
*Eucalyptus leucoxylon rosea			X											X		
*Eucalyptus macrandra				X							X		X			
Eucalyptus polyanthemos				X	X									X		
Eucalyptus pulverulenta				X								X				
*Eucalyptus sideroxylon pallens			X										X			
*Ficus (nitida) retusa			X			X					X		X			
Ficus pumila	X											X				
Gazania (Mixed Hybrids)	X							X								
*Ginkgo biloba (Male, fastigiate form)			X											X		X
Hemerocallis (Evergreen Species)	X							X	X							
Lantana sellowiana	X								X							
Leptospermum laevigatum					X								X			
Libocedrus decurrens					X									X		
*Limonium Perezii	X								X							
Magnolia grandiflora					X										X	
Melaleuca leucadendron				X									X			
Melaleuca styphelioides			X	X									X			
Melia Azederach umbraculiformis				X	X								X			
Nerium oleander				X	X						X					
Opuntia (Spineless forms)		X									X					
†*Pandorea pandorana	X										X					
Parkinsonia aculeata				X									X			
Phaedranthus buccinatorius		X										X				
*Phoenix dactylifera				X									X			
*Phormium tenax (all forms)			X							X						
Pittosporum tobira				X							X					
Pittosporum undulatum			X	X								X				
Podocarpus elongatus		X		X								X	X			
*Prunus lyoni			X	X							X	X				
Pyracantha (Select Varieties)			X							X						
Rosa "Mermaid"		X										X				
Senecio angulatus		X									X					
Spartium junceum		X								X						
Solanum jasminoides	X										X					
Tecomaria capensis		X										X				
*Trachycarpus fortunei			X								X					
*Washingtonia robusta			X										X			
*Xylosma senticosa			X								X					
Yucca elephantipes				X								X				
Yucca spp.		X		X						X	X	X				

SPECIES	DISPLAY VALUE	REMARKS
Acacia baileyana	Floriferous	Brittle, needs pruning, tolerant of poor conditions
†Acacia podalyriaefolia	Gray foliage, yellow flowers	Very early bloomer
Acacia pruinosa	Fragrant	One of finest of all Acacias
†Acacia pycnantha	Showy, yellow, fragrant flowers	An excellent sand binder
Acacia saligna	Showy, large, yellow flowers	Late spring bloomer
†Acacia vestita	Weeping shrub	Seems to withstand other root competition
†Acokanthera spectabilis	Bronze, evergreen foliage	Flowers fragrant, fruit red & showy. Latex poisonous
†Acokanthera venenata	Bronze, evergreen foliage	Flowers fragrant, fruit red & showy. Latex poisonous
Aeonium arboreum	Succulent, green foliage, yellow flowers	Very tolerant of unfavorable conditions
Ailanthus altissima	Colorful seedpods	Very tolerant, suckers
Arctotis acaulis (Hybrids)	Brilliant flowers	Needs full sun, needs light pruning
Baileya multiradiata	Gray foliage, woolly, yellow, showy	Very tolerant of drought
*Bougainvillea "San Diego Red"	Bright red flowers	One of the hardiest Bougainvilleas, easy to transplant
Callistemon lanceolatus	Ornamental small tree	Full sun; drought and alkali tolerant.
Cercis siliquastrum & spp.	Spring bloom	Stands some shade
*Chamaerops humilis	Tropical foliage	Tolerant
Chrysanthemum maximum "Marconi"	Very large white Daisy flowers	Divide every three to four years
Cistus crispus	Good foliage—bloom	Arid loving; good filler for poor soils
Clytostoma callistegioides	Evergreen vine foliage for fences	Stands shade and north walls, also sun
Crassula arborescens	Succulent shiny gray foliage Winter fl.	Very tough
Crassula argentea	Succulent shiny green foliage Winter fl.	Very tough
*Cupania anacardioides	Clean evergreen foliage, neat form	Stands smog
Cupressus arizonica	Pale green conifer	Very tolerant
†Dodonea viscosa	Evergreen, Lt. gr. foliage	Untried but should be valuable—decorative fruit
†Dodonea viscosa purpurea	Evergreen, Plum-colored foliage	Untried but should be valuable—decorative fruit
Elaeagnus pungens	Silver gray-green foliage	Very tough
Escallonia organensis	Dense foliage, pink flowers	Will stand hard pruning
*Erythea edulis	Specimen palm	Slender clean trunked palm
Eucalyptus camaldulensis (rostrata)	Interesting form—grayish bark	Endures alkali, heat and smog
*Eucalyptus citriodora	Skyline silhouette, white smooth bark	Tender only when young
Eucalyptus crucis	Interesting form gray foliage	Prune to retain juvenile foliage
*Eucalyptus leucoxylon rosea	Pendulous habit, pink flowers	Medium sized tree—tolerant: smog, alkali, etc.
*Eucalyptus macrandra	Flowers, decorative three times a year	Makes excellent clipped hedge & specimen—Extra tough
Eucalyptus polyanthemos	Interesting foliage	Stands pruning to retain juvenile foliage
Eucalyptus pulverulenta	Silver-gray foliage	Prune hard to retain juvenile foliage
*Eucalyptus sideroxylon pallens	Pendulous habit, interesting bark	Long flowering—needs water until established
*Ficus (nitida) retusa	Neat evergreen foliage	Excellent subject for tailored effect, voracious roots
Ficus pumila	Clinging evergreen wall cover	Fairly slow to start, but easy to propagate
Gazania (Mixed Hybrids)	Colorful flowers	Good ground cover
*Ginkgo biloba (Male, fastigiate form)	Fall foliage color, interesting branching	Very tolerant of fumes, pest free
Hemerocallis (Evergreen Species)	Yellow bloom	Good filler
Lantana sellowiana	Abundant bloom	Excellent ground and bank cover
Leptospermum laevigatum	Interesting form, white flowers	Very tough
Libocedrus decurrens	Pyramidal conifer, native	Drought resistant, but grows faster with water
*Limonium Perezii	Bloom—foliage	Good low filler
Magnolia grandiflora	Glossy foliage, large white flowers	Slow growing
Melaleuca leucadendron	Interesting thick papery bark, frag. foliage	Very tolerant
Melaleuca styphelioides	Interesting papery bark—flowers	Very tolerant
Melia Azederach umbraculiformis	Umbrella form small tree	Very tough
Nerium oleander	Summer flowers, varying colors	Shrub or tree with suckers, very tolerant
Opuntia (Spineless forms)	Interesting form, showy red fruit, edible	Hot dry locations
†*Pandorea pandorana	Evergreen glossy foliage vine	Likes water, excellent fence cover, very tolerant
Parkinsonia aculeata	Interesting form, yellow flowers	Hot, dry conditions or water—wide tolerance
Phaedranthus buccinatorius	Orange-red trumpet flowers	Colorful fence and wall cover
*Phoenix dactylifera	Tropical feather palm.	Easily grown but slow
*Phormium tenax (all forms)	Strap-like foliage, tropical effect	Quite tough
Pittosporum tobira	Dark green accent, Berries and Flowers	Clean, neat; subject to Aphis when over-watered
Pittosporum undulatum	Fragrant bloom, colorful fruit	Useful as shrub or tree
Podocarpus elongatus	Pendulous habit, fine evergreen foliage	Better in some shade
*Prunus lyoni	Durable evergreen foliage	Withstands abuse
Pyracantha (Select Varieties)	Winter berries, spring flowers	Needs attention and pruning, Espalier, good barrier hedge
Rosa "Mermaid"	Evergreen foliage, light yellow Fls.	Rampant fence cover
Senecio angulatus	Succulent foliage, yellow flowers	Good fence and bank cover
Spartium junceum	Broom-like foliage, yellow-pea flowers	Very tough and drought loving
Solanum jasminoides	Winter flowers	Fence cover, better with water and light shade
Tecomaria capensis	Orange-red flowers	Fence and bank cover
*Trachycarpus fortunei	Fan palm	Slow growing, long lived, heat tolerant
*Washingtonia robusta	Tall slender fan palm	Very resistant of unfavorable conditions
*Xylosma senticosa	Shiny light green or bronze foliage	Excellent low masking shrub
Yucca elephantipes	Bold tropical looking	Smog and wind resistant
Yucca spp.	Interesting form—large Fl. spikes	Very tolerant

* — Best for quantity use and most adaptable.
† — Unproven for smog tolerance but should be suitable.

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COLD RESISTANCE OF SUBTROPICAL ORNAMENTALS

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Little published information is available regarding the cold resistance of many of the more tender plants cultivated in the milder areas of California. This is particularly true of recent plant introductions. No part of the state is entirely free of frost, and in many locations, temperatures well below freezing can be expected at irregular intervals.

An uninterrupted succession of severe winters, 1947-48, 1948-49, and in some localities 1949-50 also, has offered the opportunity to evaluate some of the available information. In some localities, hibiscus, bougainvilleas and other tender ornamentals have virtually disappeared from nurseries, although a series of mild winters will probably encourage planting of these again.

Several nurseries have published minimum safe temperatures in their catalogs. The Armstrong 1937 Nursery catalog[1] presents evaluations made previous to the unusually severe freeze of that year. Some of the changes in evaluations during the period to 1951 are shown in the Armstrong Nursery catalog of that year[2]. The undated Evans and Reeves Nursery catalog[6] was published shortly after the 1937 freeze. Butterfield[5] has given closely similar evaluations of hardiness of various common ornamental plants. The standards used for evaluation of cold resistance have not been stated clearly by these authorities. On the other hand, Binder, Simpson and Wagnon[4] classified the plants according to the degree of injury, making most of their observations following a minimum temperature of approximately 20°F. According to these writers 20°F. was a critical temperature for a great many of the ornamental plants of Southern California, and damage was extremely severe below this point.

The weather conditions prevailing in the vicinity of West Los Angeles during the winters of 1947-48 and 1948-49 have been recorded in considerable detail by Hodgson, Schroeder and Wright[7] and therefore need not be given in similar detail here. In the first season, on December 30-31, minimum temperatures of 28°F. were recorded, and 24.5°F. on January 27-28. The authors have commented on the relatively prolonged duration of the temperatures and the unusually low dew points. However, the rainfall was relatively light prior to the freeze, and the plants were in fairly good condition to undergo low temperatures. Since these authors have commented on the numerous subtropical fruits used as ornamentals, these are omitted from this discussion.

The early season of 1947-48 offered a good opportunity to observe the critical temperatures which injured tips of fo- of injury could be noticed on certain plants since the temperatures lowered progressively. Observations by Siegelman[12] began on November 3, 1947 and were continued until February 2, 1948. These were made in a large wholesale nursery growing nursery stock in containers at Monrovia. The first frost was on November 23, with a temperature of 27°, and was followed by temperatures of 26° on December 11, and 24° on December 31. From December 31 to February 2 there were eight nights on which freezing occurred, but no temperatures were lower than 24°F. One observation was the rather small difference between temperatures at which certain degrees liage slightly and those which caused complete defoliation. This was usually within the range of one to three degrees F.

The freezes of 1948-49 also came after a relatively dry period, but were more severe. Lowest temperatures were recorded on January 3-4, 4-5, and 9-10, with the

lowest temperatures on the first night. During the night of January 3-4, temperatures of 24°F. were recorded for one hour. Slightly lower temperatures were recorded at the lowest portion of the University Botanic Garden. During this night, minimum temperatures of 20°F. and 21°F. were recorded in a number of nurseries in the lower lying portions of West Los Angeles. Moderately low temperatures were recorded on several nights following the night of January 3-4. One observation which was made by the author and confirmed by other observers was the relatively slow appearance of foliage damage on many ornamental plants. In some cases the true extent of the damage did not show up for several weeks.

The 1949-50 freeze occurred on December 11, and followed a period of warm weather in late November, together with rain. This had started a flush of growth which was often injured severely, even on some California natives such as Catalina cherry, and other plants ordinarily considered quite hardy. During this season, the minimum temperatures were in general by no means as low as in the previous winter. Severe damage was localized in the outlying areas east and north of Los Angeles, but was light in areas studied closely by the author. Extensive damage at relatively few degrees of frost was typical. Such observations show conclusively that the amount of damage to be expected on a given species of plant varies from year to year. In this instance the active condition of growth and possibly also the low dew point were major factors in the severity of the damage.

The observations recorded and assembled by the author include only those sites in which minimum temperatures were recorded in the immediate vicinity. They include records of the author made immediately after the lowest temperatures, and those furnished by local nurserymen. The botanical names, where possible, follow those given by Bailey[3].

Palms—Damage to the palms commonly grown was rather light in the areas observed by the author, in the 1948-49 freeze. Near 20°F. the queen palm, *Arecastrum Romanzoffianum (Cocos plumosa)* showed foliage injury. The other common palms did not. The beautiful palm, *Loroma amethystina,* is not common and is considered to be too tender for widespread use in southern California. However, it was observed to survive in some rather cold areas in which minimum temperatures were close to 20°F. It may be hardier than generally believed when well established. *Phoenix rupicola, Phoenix reclinata,* and *Jubaea spectabilis* likewise were not seriously injured at the same temperatures.

Eucalyptus—Most of the Eucalyptus species commonly grown were not seriously affected by temperatures down to 20°F. *Eucalyptus ficifolia* lost much wood of the tops at this minimum in January 1949, but recovered well. *E. cladocalyx (E. corynocalyx)* was observed to be frosted noticeably at this temperature. Some injuries were observed on *E. citriodora, E. Lehmanni* and *E. cinerea,* although Binder *et al*[4] recorded *E. cinerea* as untouched below 20°F.

Acacias—Except in the colder areas, all species of acacias kept blooming or were undamaged during and following the January 3-4 freeze of 1949. Binder *et al* recorded damage only on *A. podalyriaefolia* at approximately 20°F.

Jasmines—All of the jasmines commonly found in nurseries were virtually untouched by temperatures close to 20°F. with the exception of varieties of *Jasminum sambac* which were more or less damaged at such temperatures.

California natives—California native shrubs in general showed little effect of most severe freezing. *Rhus laurina* was a conspicuous exception. This was abundant in areas where exceedingly severe damage was observed. The occurrence of this plant in large mature specimens may usually be taken as evidence of an area suitable for the growing of rather tender plants.

Ferns—Some valuable data on the comparative hardiness of ferns was obtained by Roberts,[11] proprietor of a nursery specializing in ferns in Palms, California. when minimum temperatures of 20°F. were experienced on the night of January 3-4, 1949. These plants were in an unheated lathhouse, and it is possible that injuries would have been measurably greater in the open at the same temperatures. However, the relative hardiness of the various ferns may be compared. Ferns showing severe injury or killed at 20°F. were *Alsophila australis, Adiantum grandiceps, Adiantum gracillimum, Blechnum occidentale, Cibotium barometz, Cibotium schiedei, Cyathea medullaris, Davallia fejeensis, Nephrodium molle (Dryopteris dentata, Pteris quadriaurita argyraea, Pteris longifolia.* Those showing slight injury were: *Platycerium alcicorne, Platycerium grande, Polypodium aureum, Polypodium knightiae, Polypodium mandianum.*

The following showed no injury: *Adiantum altadena, Asplenium bulbiferum, Cyrtomium falcatum, Cyrtomium fortunei, Davallia canariensis, Dicksonia antarctica, Dicksonia fibrosa, Doodia aspera, Lygodium*

japonica, Microlepia platyphylla, Nephrodium hertipes (Dryopteris hirtipes), Onychium japonicum, Pellaea adinatoides, (P. viridis), Polypodium coronans (Drynaria heraculeum), Polypodium glauco-pruinatum, Polystichum aculeatum, Polystichum setosum, Polystichum tsus-sinense, Pteris childsii, Pteris cretica, Pteris cretica alba-lineata, Pteris ouvrardii, Pteris parkerii, Pteris tremula, Scolopendrium vulgare (Phyllitis scolopendrium).

The superior hardiness of the two species of *Dicksonia* among the tree ferns over *Alsophila* or *Cibotium* species may be noticed. Observations by Binder et al[4] indicated varying degrees of injury to various species of tree ferns before temperatures reached 20°F.

Vines—Unfortunately a great many of the finest evergreen foliage and flowering vines grown in southern California are rather tender and are severely injured or killed at temperatures between 20° and 30°F. In working out a plant list for any given locality, a reasonably accurate knowledge of the probable suitability to the site is particularly important.

Table I presents a summary of available information on vines.

TABLE I
COMPARATIVE COLD RESISTANCE OF VINES

	Armstrong 1937	Armstrong 1951	Evans & Reeves	Butterfield	Observed Effects Following Minimum Temperatures: Severe Injury	Slight Injury	No Injury
Beaumontia grandiflora	24°F.	...	25°F.	....	21°F.	25°F.	....
Bougainvillea spectabilis	18	20	....	20	....	....	21(ap.)
Bougainvillea (most vars.)	25	28	25	28	24	26	....
Cissus capensis	24	28	....	....	25	....	....
Cissus hypoglauca	....	24	....	....	24	27-21	....
Cissus rhombifolia	....	....	....	...	26	..	...
Clytostoma callistegioides	18	20	....	....	....	....	21
Distictis lactiflora	20	24	25	....	....	25	....
Doxantha unguis-cati	....	0	....	....	....	....	21
Ficus pumila	15	15	.	15	....	24	21
Gelsemium sempervirens	12	15	15	15	....	....	21
Hardenbergia Comptoniana	22	20	....	...	....		25
Hedera carnariensis	15	12	....	....	....	21	...
Hibbertia volubilis	20	20	....	....	21	26	....
Lantana Sellowiana	...	...	....	....	26	..	....
Lonicera Hildebrandiana	....	....	22	24	21	25-21	...
Muehlenbeckia complexa	....	..	....	....	..	....	21
Oxera pulchella	....	25	25	....	....	25	...
Pandorea pandorana	...	....	..	....	....	....	21
Pandorea jasminoides	....	....	20	....	24	26	....
Philadelphus mexicanus	12	12	15	....	....	....	21
Phaedranthus buccinatorius	20	24	22	....	26	27-21	25
Pyrostegia ignea	24	26	24	27	21	25	....
Solandra guttata	25	28	27	27	25		....
Solanum jasminoides	.	....	....	....	..	21	
Sollya heterophylla	18	....		...	...	....	21
Stigmaphyllon ciliatum	22		24	....	....	....	25
Tecomaria capensis	22	24	..	....	26	27	....
Thunbergia Gibsonii	25	....	27	....	....	25	...
Thunbergia grandiflora	22	30	20	....	27	.	..
Trachelospermum jasminoides	18	18	18	18	....	.	21

The three papers by Jones (8, 9, 10) constitute an important source of horticultural information on vines, including hardiness. However, the latter is commonly discussed with reference to localities in which the plant may be grown with critical temperatures listed in only a few cases. She emphasized the necessity for a number of years in order to obtain woody growth of stems for full expression of maximum hardiness of the vine.

Table I shows that relatively few evergreen flowering vines are available for areas having minimum temperatures of 20°F. or less. Among the bignoniaceous climbers, *Clytostoma callistegioides (Bignonia violaceae)*, *Doxantha unguis-cati*, and *Pandorea pandorana* were notable for cold resistance, all withstanding 20°F. or less. The possibility of breeding as a means of increasing the list of vines for colder areas should not be overlooked.

Observations on shrubs and trees made here excluded in a large measure the long lists of plants which are recognized to be reliably hardy to about 10°F. and attention was concentrated on the more tender plants, particularly newer introductions. The observations on shrubs are shown in Table II, and those for trees in Table III. In these tables, "slight injury" indicates injury to tender new growth or tips of stems only. "Severe injury" indicates damage to virtually all foliage or even to the woody stems also.

The data presented in the tables shows

TABLE II
COMPARATIVE COLD RESISTANCE OF SHRUBS

	Arm-strong 1937	Arm-strong 1951	Evans & Reeves	Butter-field	Observed Effects Following Minimum Temperatures: Severe Injury	Slight Injury	No Injury
Abutilon vitifolium	**20°F.**	**24°F.**	....	....	**21°F.**	....	....
Acokanthera spectabilis	....	....	**24**	....	**21 (killed)**	....	....
Athanasia parviflora	....	....	**22**	....	....	....	**25**
Beloperone guttata	....	**24**	....	....	**21**	**27**	....
Bouvardia "albatross"	**25**	**27**	....	**27**	**22-26**	**27**	....
Brunfelsia calycina floribunda	**20**	**20**	**20**	**20**	....	**24-21**	....
Calliandra inaequilatera	....	....	....	....	**21 (killed)**	....	....
Calliandra Tweedii	**20**	**18**	**15**	....	....	**21**	....
Cassia splendida	**20**	**20**	**22**	....	....	....	**25**
Cestrum elegans	....	....	....	....	....	**26**	....
Cestrum nocturnum	**15**	**22**	....	....	**26-21**	....	....
Chamaelaucium uncinatum	....	....	**22**	....	....	....	**21**
Chorizema varium	**20**	....	....	....	**21**	....	**24**
Clerodendron myricoides	....	....	**25**	....	....	....	**25**
Cocculus laurifolius	**22**	**25**	....	....	....	....	**21**
Coleonema album	**20**	**20**	....	....	....	....	**21**
Coleonema pulchrum	....	**22**	....	....	....	....	**21**
Coprosma Baueri	**20**	....	....	....	....	**26**	....
Correa alba	....	**20**	....	....	....	....	**21**
Correa speciosa	**18**	....	**22**	**24**	....	....	....
Crotalaria agatiflora	....	**25**	....	....	**26-21**	**27**	....
Duranta stenostachys	....	**24**	**24**	....	**24-21**	**27**	....
Eranthemum nervosum	**24**	**24**	....	....	**21**	....	....
Euphorbia pulcherrima	....	**28**	....	....	**27-21 (killed)**	....	....
Euryops athanasiae	**22**	**18**	**24**	....	....	....	**21**
Fatsia japonica	....	**15**	....	....	....	**25**	....
Fuchsia (Tender vars.)	....	**22**	....	**22**	**21**	....	....
Gardenia mystery	....	**15**	....	....	....	....	**21**
Grevillea Banksii	**20**	....	....	....	....	....	....
Grewia caffra	**18**	....	**18**	....	**23**	....	....
Hibiscus Rosa-sinensis	**20**	**22**	**24**	....	**26-21**	**27**	....
Holmskioldia sanguinea	**20**	**22**	**24**	....	....	....	**25**
Kunzea sericea	....	....	**22**	....	....	....	**25**
Lantana camara	**22**	....	....	**22**	**26-21**	....	....
Leptospermum laevigatum	**15**	**15**	....	**15**	....	....	**21**
Leptospermum scoparium	**15**	**15**	....	....	....	....	**21**
Murraya paniculata (exotica)	**20**	**20**	**20**	**22**	**26-24-21**	....	....
Myoporum laetum	....	**20**	....	....	....	**21**	....
Myrsine africana	....	....	**20**	....	....	....	**21**
Ochna multiflora	..	**20**	....	**20**	....	....	**25**
Plumbago capensis	....	**24**	....	**24**	**24-21**	**26**	....
Polygala Dalmaisiana	**20**	....	....	....	....	....	**25**
Rondeletia cordata	....	**26**	**25**	....	**27-21**	**25**	....
Solanum Rantonnettii	....	**25**	....	....	**24**	**26**	....
Strelitzia Reginae	....	**24**	....	**24**	**21**	**25**	....
Streptosolen Jamesonii	....	**29**	....	**29**	**21 (killed)**	....	....
Strophanthus speciosus	....	....	**24**	....	....	....	**25**
Thevetia peruviana	....	....	**22**	....	**24-21 (killed)**	....	....
Tibouchina semidecandra	**22**	....	....	**28**	**21**	**27**	....
Turraea obtusifolia	**18**	**26**	**24**	....	**21**	....	**25**
Xylosma senticosa	....	**15**	**10**	....	....	....	**21**

that although some damage may be observed at temperatures higher than those listed as safe for the particular species, these estimates of hardiness are fairly reliable and should be expanded to cover a greater number of plants.

One possible explanation for the severe damage observed in some instances was that most of the low temperatures recorded here were accompanied by low dewpoints as discussed by Hodgson, Schroeder and Wright[7]. A possible field for future studies would be an attempt to evaluate the correlation between dewpoint and severity of damage.

Observations of nurserymen seem to indicate a particularly adverse influence of frost accompanied by low dewpoints on tender sub-tropical and tropical plants. However, this may be a relatively unimportant factor with plants in other groups such as many of the California native plants or Mediterranean plants, particularly those having sclerophyllous or grey-tomentose foliage. This is an unworked field for ecological study. The use of controlled laboratory techniques would present considerable mechanical difficulties.

The abnormally low minimum temperatures of January 3-4, 1949 were followed by relatively long-continued periods of temperatures slightly below freezing. One characteristic feature of this freeze was the exceedingly long period of time for the full extent of the damage to show up. Much of the injury was not apparent until the end of January or even much later. Possibly some of this damage was due to the later long-continued slightly freezing temperatures rather than to the sharp freeze of January 3-4.

The recovery of many plants injured

by the 1948-49 freeze was often slow. In some instances, new growth did not appear until late in the following summer. The best recovery was made when plants were left unpruned and unfertilized with minimum irrigation until the new growth was well started.

Freezing weather early in the fall may be much more serious than the same temperatures would be later in the season. Thus several large commercial growers of roses in the Los Angeles area experienced troublesome damage from unusually early but relatively mild frosts in the fall of 1950.

Among other important factors which are involved in damage from cold is the age of the plant. Thus a tree of *Delostoma rosea* at 25°F. was practically uninjured, although at the same nursery all young plants in containers were killed. Materials recently planted in the ground or shifted to larger containers were especially vulnerable. All through the two most severe winters, losses of nursery plants were large, but although well established ornamental plantings were damaged severely, most plants eventually recovered.

Active shoot growth should be restrained as much as possible during the winter. This can be aided by withholding fertilizer and water in the fall. However, in California, which has a typical Mediterranean climate, the fall and winter rains when accompanied by periods of warm weather may start growth in spite of such precautions. Some colder regions with dry winters are known to be safer for certain plants than California. On the other hand, when freezing weather comes, it is sometimes advantageous to have moist soil since this accumulates more heat.

The number of times of exposure to a minimum temperature and the duration of these exposures are undoubtedly both important. Some areas in northern California have minimum temperatures which are no lower than those in southern California, but nevertheless cannot grow some of the plants common in this area. Probably this is due to the much longer average duration of the low temperatures. This has been observed not only for the more tropical type of plants, but some which are characteristic of more temperate regions. For instance, *Medicago arborea* has been observed by local nurserymen to withstand freezing without interruption of blooming in the coldest areas of the San Fernando Valley. However, this plant apparently winter kills easily in northern California.

Many striking instances of the influence of ground radiation were observed in

TABLE III
COMPARATIVE COLD RESISTANCE OF TREES

	Armstrong 1937	Armstrong 1951	Evans & Reeves	Observed Effects Following Minimum Temperatures: Severe Injury	Slight Injury	No Injury
Agonis flexuosa	....	....	20°F.	21°F.	....	....
Alstonia scholaris (of trade—probably a Rauwolfia)	....	....	25	21	25	....
Bauhinia purpurea	22	20	....	....	24	....
Brachychiton acerifolium	22	24	22	....	25	..
Brachychiton populneum	....	....	....	....	....	21
Callistemon speciosus	15	15	20	....	....	21
Calodendrum capense	15	(22—young) (15—mature)	22	....	....	21
Castanospermum australe	....	....	20	....	....	25 and lower
Clethra arborea	....	20	22	24	27	....
Corynocarpus laevigata	....	....	22	....	23	....
Crinodendron dependens	15	15	22	....	....	25
Delastoma rosea	....	....	25	....	....	25
Eugenia paniculata australis	....	24	....	....	24	....
Ficus retusa (nitida)	....	....	24	25-24-21	26	....
Grevillea robusta	15	15	....	....	....	21
Harpephyllum caffrum	....	....	25	....	....	25
Hymenosporum flavum	20	20	20	....	....	21
Jacaranda acutifolia	22	22	....	24	26	....
Koelreuteria bipinnata	....	....	18	....	....	21
Lagunaria Pattersonii	20	....	....	....	....	21
Markhamia Hildebrandtii	....	....	24	21	....	25
Metrosideros tomentosa	....	....	25	25-21	....	....
Nuxia floribunda	....	....	25	....	....	25
Pittosporum rhombifolium	....	20	....	....	26	....
Pittosporum undulatum	22	20	....	21	26	....
Podocarpus gracilior	....	15	....	....	21 (tips only)	21
Podocarpus macrophylla	....	....	....	....	....	21
Schinus Molle	18	10	....	....	....	21
Schinus terebinthifolius	22	22	....	....	24	....
Stenocarpus sinuatus	....		26	....	....	25
Tipuana tipu	22	....	22	....	....	25
Vitex lucens	....	20	26	....	....	25

West Los Angeles during the freezes of 1947-48 and 1948-49. Since low temperatures in southern California are usually of short duration, ground radiation of heat is frequently an important factor in mitigating the effects of low air temperatures. After prolonged low temperatures this reserve may become depleted, however.

On the night of January 3-4, 1949, plants under lath usually fared better than those fully exposed. In the West Los Angeles area, plants under overhanging eaves of houses or under trees often escaped serious injury only a short distance from locations where fully exposed plants were killed to the ground.

Plants against masonry walls or stones were often much less injured than those against wooden walls. Although drying out of the soil is used as a means of conditioning plants against cold, the soil should be moist rather than dry in advance of the freeze, as the moist soil will store more heat.

Deep canyon sites frequently present difficulties not only because of unfavorable drainage of cold air to the lower levels, but also because the sun is cut off for so much of the day. Striking examples of temperature inversions were noticed and the downward movement of cold air masses on canyon slopes could be traced. Barriers in the path of such movements can sometimes act to create cold air pockets, which increase frost damage. In such situations, windbreaks or fences with open spaces at the bottom are best.

Adequate hardiness for the site is particularly important with trees. Among those no longer approved for planting in the colder sections of the city of Los Angeles, such as the floor of the San Fernando Valley are: *Calodendrum capensis, Erythrina constantiana, Eucalyptus citriodora, E. ficifolia, E. lehmanni, Eugenia paniculata australis, Ficus retusa, Jacaranda acutifolia, Koelreuteria bipinnata, Melaleuca leucadendra, Pittosporum undulatum, Tristania conferta,* and *Vitex lucens.*

Some other trees which probably are even more tender than these should be planted only in the most favorable sites. These include: *Bauhinia purpurea,* various *Dombeyas, Euphorbia tirucalli, Harpephyllum caffrum, Harpullia arborea, Royena lucida, Spathodea campanulata, Wigandia caracasana.*

Some trees which probably should be considered hardy to 20°F., but which, according to the author's observations, may on occasion be damaged are: *Chirantodendron platanoides, Corynocarpus laevigatus, Crinodendron dependens, Cupania anacardioides, Hymenosporum flavum, Olmediella betschleriana.*

Some trees which appear to be entirely safe at temperatures somewhat under 20°F. are: *Azara microphylla, Callistemon casuarinas, Ceratonia siliqua, Cinnamomum camphora, Cordyline australis, Dracaena draco, Elaeodendron capense, Grevillea robusta, Hakea saligna, Lagunaria Pattersonii, Laurus nobilis, Magnolia grandiflora, Melaleuca genistifolia, Ligustrum nitidum, Lyonothamnus floribundus, Maytenus boaria, Pittosporum phillyraeoides, Podocarpus gracilior, Podocarpus macrophylla, Umbellularia californica.*

Acknowledgments: Thanks are due to Mr. H. W. Siegelman, Mr. Harold Wescott, Mr. Morgan Evans and Mr. A. W. Roberts for permission to use their records and information on cold resistance of plants.

[1] Armstrong Nurseries, Ontario, California. Nursery catalog. 1937.

[2] Armstrong Nurseries, Ontario, California. Nursery catalog. 1951.

[3] Bailey, L. H. Manual of Cultivated Plants. Macmillan Company. 1949.

[4] Binder, Morton, Willard J. Simpson, and Jack Wagnon. A survey of the frost hardiness of broad-leaf evergreens. Pacific Coast Nurseryman 8(3): 10-12. 1949.

[5] Butterfield, H. M. Frost tolerance of ornamentals. Jour. Calif. Hort. Soc. 10(2): 80-82. 1949.

[6] Evans and Reeves, Los Angeles, California. Nursery catalog. Undated.

[7] Hodgson, R. W., C. A. Schroeder, and A. H. Wright, Comparative resistance to low winter temperatures of subtropical and tropical fruit plants. Proc. Amer. Soc. Hort. Sci. 56:49-64. 1950.

[8] Jones, Katherine D. Thirty important vines for California. Nat. Hort. Mag. 15(1): 1-65. 1936.

[9] Thirty more climbers for California. Nat. Hort. Mag. 16(1): 1-57. 1937.

[10] ..... Thirty more climbers for California. Nat. Hort. Mag. 17(1): 13-58. 1938.

[11] Roberts, A. W. Personal records. 1949.

[12] Siegelman, H. W. Personal records. 1948.

[13] Wescott, H. Personal records. 1949.

WEATHER RECORDS

LOS ANGELES STATE AND COUNTY ARBORETUM

J. T. McGAH

1951	TEMPERATURE AVERAGE		PRECIPITATION PEAKS		TOTAL
MONTH	Min.	Max.	Min.	Max.	Month
JANUARY	38.8	68.0	31.0	90.0	3.82
FEBRUARY	38.3	70.0	28.0	84.0	1.01
MARCH	40.6	75.3	30.0	93.0	0.82
APRIL	47.3	72.7	33.5	86.0	2.81
MAY	47.2	81.0	40.0	92.0	0.40
JUNE	53.1	83.3	47.5	94.5	0.00
JULY	57.7	93.5	49.0	103.0	0.00
AUGUST	55.5	92.8	51.0	101.0	0.20
SEPTEMBER	54.1	91.0	49.5	106.0	0.00
OCTOBER	49.0	85.3	43.0	101.0	0.66
NOVEMBER	43.5	74.6	35.0	89.0	1.51
DECEMBER	38.5	65.0	27.0	73.0	7.37

TOTAL, 18.60 INCHES

PERUVIAN BLACK WALNUT[1]

By R. J. SEIBERT

Edible nut trees in Central America are rare; the production of edible nuts is practically non-existent; and the source of fine quality furniture wood is becoming limited. It is highly possible that the recent introduction of the Peruvian black walnut, *Juglans neotropica* Diels, may help serve a multipurpose need for the middle elevation areas of Central America.

Juglans neotropica is the name most commonly applied to the black walnut of the Andean slopes, existing at least from Ecuador to Bolivia. Additional species have been described from within this large range but there will remain some question as to their validity until more collections are available and until a critical study is possible. It is known that considerable variability exists within confined areas, and certainly its geographic distribution suggests a highly variable range of habitats. Care should be taken in the selection of types suitable for specific localities,—perhaps grafted horticultural varieties may be the solution.

In the region of the comparatively low passes of northern Peru the Peruvian black walnut grows in the valleys of both eastern and western Andean slopes in comparatively dry conditions between 1500 and 2100 meters. Otherwise the tree seems to exist under the wetter conditions found in the valleys cutting into the eastern slopes of the Andean range throughout Peru and well into Bolivia. From personal observation in the vicinity of Tingo María and east to the Pampas del Sacramento, from La Merced and the upper Perené valley, the Urubamba valley, and from Quince Mil in the Inamabari and subsidiary valleys, this tree grows at an altitude of from 600 to 1400 meters under an annual rainfall from 100 to 200 inches. The tree also has been observed cultivated in Lima under irrigation in desert conditions.

Old trees will vary from 15 to 30 meters tall and from 60 to 90 centimeters in diameter. The boles of trees in the forest are straight and without low branches. However, when cultivated in the open there would appear to be a natural low branching unless pruning is applied.

The wood is highly prized in Peru for furniture and various cabinet work, including inlay. The color of the wood is dark brown with medium grain. The wood has a satin-like texture. It is very similar in quality to the black walnut of the United States, even to its odor. Wood in my possession in the United States has neither warped nor checked over a period of a year and a half. At Turrialba, Costa Rica, a board under test for nearly two years has been resistant to both termites and the powder post borer.

The nuts of the Peruvian black walnut are very similar to those of the black walnut of the United States. The grooves of the hard seed coat of *J. neotropica* are

[1]Reprinted from CEIBA I: 190-192. 1950.

more rounded, or less sharp, than those encountered in *J. nigra*. The size range of the hulled nuts is variable from two to about five centimeters in diameter. In flavor the kernels are excellent and indeed similar to those of the better varieties of *Juglans major* and *J. nigra*.

The nuts are eaten locally in Peru and are esteemed by those who know them. However, due to the scattered distribution in the forests the nuts seldom reach markets. Apparently no commercial groves have been planted, either for nuts or for lumber.

During September 1948 seeds were obtained through our representative at the Estación Experimental Agrícola de Tingo María, Peru, from the La Merced region of the upper Perené valley. Of thirty-five seeds planted directly in the nursery bed[2] (without cutting the seed coat) we obtained ten seedlings. The first seed germinated within six weeks after planting. The seedlings were transplanted to permanent sites at about seven months of age with perfect transplanting success, without undue care. The seedlings varied from 45 to 150 centimeters tall. The largest seedling after nearly one year from planting the seed is now 2.1 meters tall with a basal diameter of five centimeters. It is not yet known at what age cultivated trees will start to fruit nor is it known how many years will be required for a tree to reach commercial timber size. Under conditions existing at Turrialba it appears, in early stages, to grow as rapidly as do mahogany and Spanish cedar.

Due to the dye content of the leaves and a strong odor, similar to that characteristic of *Juglans nigra*, this species is not eaten by animals. This advantage will make the tree ideal for fence-rows and door-yards. It is a tree with both a high lumber value and also it produces edible nuts.

The natural habitat of the tree plus our limited experience with it so far indicate that it could be planted at altitudes from about 600 to 1700 meters above sea level, both in areas of limited dry season and in those with perhaps as much as a dry season of six months. To date, no fungus, or insect pests have been noted attacking this species at Turrialba.

To the above article, the writer wishes to record the following observations of the species at the Los Angeles State and County Arboretum:

Ten seeds of *Juglans neotropica* were obtained by the Arboretum during June 1950 through Dr. Ramon Ferryra of Lima, Peru. From this seed lot one seedling germinated which was grown under glass during the winter of 1950-51. During the summer of 1951, the young tree was planted on the Arboretum grounds, where it was unprotected through the frosts of the past winter, surviving a minimum of 24°F. with no more than slight tip damage.

Mr. Ralph La Rue, Farm Advisor, San Bernardino County, reports that a plant, possibly of the same species, was formerly grown at the Riverside Experiment Station where it was lost during the freeze of 1937.

Juglans neotropica is a deciduous tree under our winter conditions in this area. Judging from its reaction this spring, it has started out as a relatively strong grower. It would appear to be worthy of further trial in the warmer parts of southern California.

---

[2]Seeds planted and plants established at the U.S.D.A. Rubber Station, Turrialba, Costa Rica.

MEMBERSHIP

Annual Associate Membership	$ 5.00
Annual Membership	10.00
Annual Contributing Membership	25.00
Annual Sustaining Membership	100.00
Annual Sponsor Membership	250.00
Life Membership	500.00
Founders	1000.00 or more
Benefactors	5000.00 or more

CLUB MEMBERSHIPS are available, at any amount, from $10 a year or more.

ALL CONTRIBUTIONS DEDUCTIBLE UNDER FEDERAL INCOME TAX LAW:

Checks should be made payable to the California Arboretum Foundation, Inc., and sent to our headquarters at 291 North Old Ranch Road, Arcadia, Calif. Phone DOuglas 7-3444.

Donations for Historical Restorations should be made payable to California Arboretum Foundation, Inc., Historical Fund.

The Los Angeles State and County Arboretum is operated by California Arboretum Foundation, Inc., a non-profit corporation. The Foundation is developing and managing the Arboretum under an agreement with the Los Angeles County Board of Supervisors. Title to the 120 acres of property is in the State of California, which has leased it to Los Angeles County for fifty years.

Construction operations are actively commenced by the County of Los Angeles in accordance with the master plan of the Foundation. Because of safety hazards the Arboretum is closed to the public during construction. Interested clubs may arrange for group conducted tours of the grounds by calling the Arboretum Office, DOuglas 7-3444

Operated By

California Arboretum Foundation, Inc.

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Lasca Leaves

ANNUAL REPORT 1951-52

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LASCA LEAVES

Quarterly Journal of the

LOS ANGELES STATE *and* COUNTY ARBORETUM

A CALIFORNIA ARBORETUM FOUNDATION, INC. PUBLICATION

R. J. SEIBERT, *Editor*

VOL. II OCTOBER, 1952 No. 4

CALIFORNIA ARBORETUM FOUNDATION, INC.

Annual Membership Meeting June 17, 1952.

ANNUAL REPORT 1951-52

We are happy to report that a great deal of work has been accomplished toward basically improving the grounds of the Arboretum during this past year.

CONSTRUCTION:

County Capital Improvement work on the grounds of the Arboretum during the current fiscal year has consisted of somewhat over $103,000 worth of contracts let last June 1951, from the 1950-51 capital improvement budget. The work consisted of major drainage facilities, paving of the central roadways, tree and debris removal, and central area sprinkler system.

During this current fiscal year the Honorable Board of Superivsors of the County of Los Angeles has let contracts approximating $130,000.00. This work consists of grading the rest of the major road system in the north acres and on Tallac Knoll, filling of land to be reclaimed in the southeast corner of the Arboretum, drainage in the north acres, and on the southeast side of the Arboretum, dead tree removal, water main and sewage line in north acres, grading of future building sites, and the construction of lath house units. The work has been in accordance with the Foundation's Master Plan for the Arboretum.

BALDWIN AVENUE:

Future permanent access to the Arboretum grounds according to the Master Plan has passed its most critical milestone during this past year. Through the magnificent work of the County Board of Supervisors, and in particular Honorable Herbert C. Legg, Baldwin Avenue has become an accomplished fact. The Trustees of the Arboretum Foundation are indeed grateful for the wonderful cooperation of the County Board of Supervisors, Arcadia City Officials and residents of Arcadia, and to the County Road Department for the splendid job done in bringing Baldwin Avenue into reality.

HORTICULTURAL PROGRAM:

Accessions of new plants and seeds at the Arboretum totaled 1870 for the fiscal year. Among seed obtained were several outstanding collections from Australia, South Africa, Puerto Rico, Java, and Argentina.

A fine collection of Orchid plants, including 227 accessions, was received from Mrs. Lucille Rawleigh Meyer of Bel Air.

Approximately 1500 trees have been planted in permanent position. Among these were planted a large number of *Acacia* and *Eucalyptus* groups which have made excellent growth this first year.

There are some 10,000 plants ready to go into permanent plantings this coming fall, which will appreciably dress up the appearance of portions of the grounds where capital improvement work has been completed.

Field nursery trial areas have been considerably expanded and include a number of plants of promise for extensive use in Southern California.

The addition to the Foundation of the Lux Arboretum Annex, in Monrovia, through donation by Dr. G. P. Lux has considerably expanded our horticultural facilities and wealth of plant materials. Over 1100 United States Department of Agriculture introductions alone have been gathered together over the past 35 years

by Dr. Lux. In addition to these introductions, there are countless other items which Dr. Lux has been bringing together for many years.

Maintenance of these collections, their labeling and accessioning will considerably add to the responsibility of the Arboretum and to its enrichment of plant materials.

RESEARCH PROGRAM:

A. The Arboretum this year has two separate research agreements with the County of Los Angeles:

1. Resolution by County Board of Supervisors adopted September 25, 1951: Research investigation, introduction, propagation, growing, testing and demonstration of trees and shrubs suitable for use in parks, and center, side and intersectional panels of road rights-of-way. A special effort to be made to locate and recommend trees and shrubs for the above purposes, which will withstand summer droughts and require a minimum of maintenance. Dissemination through publication of such cultural information acquired through this research study as shall be of benefit to the County of Los Angeles. $34,000.00.

2. Resolution by County Board of Supervisors adopted December 11, 1951: Research investigation, introduction, propagation, growing, testing, and demonstration of heavy duty, drought resisting, evergreen turf grasses and soil binding plants suitable for use in and around County golf courses, playgrounds, athletic fields, parks, and institutional buildings. Planting material of potential value to be furnished insofar as is available for large scale practical testing at County properties.

Dissemination through publication of such cultural information acquired through this research study as shall be of benefit to the County of Los Angeles. $22,600.00.

B. During March 1952, California Arboretum Foundation signed an agreement with Monsanto Chemical Company for the purpose of testing "Krilium Soil Conditioner" in our soils from the standpoint of use by the home gardener. For this testing program at the Arboretum, Monsanto is contributing the amount of $12,320.00; the program to run from March 12, 1952 to March 11, 1953.

CO-OPERATIVE RESEARCH AGENCIES:

1. Division of Plant Exploration and Introduction, U. S. D. A., furnishes potential cortisone-producing plants for test in our area, as well as many other foreign plants of potential ornamental value for our area.

2. U. S. Soil Conservation Service, San Fernando, cover cropping plants and *Eucalyptus* species.

3. U. S. Forest Service, plants for erosion control and drought resistance.

4. Los Angeles County Flood Control District, has furnished instruments for the recording of official weather data: i.e.—rainfall. Max.-Min. temperature and evaporation.

5. Department of Pharmacy, University of Southern California, growing of certain Solanaceae for strategic alkaloid analysis.

6. California State Highway Department, mutual testing of plants for future freeway plantings.

7. Botany Department, U. C. L. A., mutual exchange of surplus plant materials for comparative growth potentialities in two specifically different areas within Los Angeles County.

8. New York Botanical Garden, growth tests of high cortisone yielding clones of *Strophanthus*.

9. Los Angeles County Park Department. testing of suitable trees, shrubs and turfs for this area.

LIBRARY:

Until facilities are available for proper housing of library books, our growth has been very limited. We are, however, indebted to our many members and friends for generous donations of valuable books and pamphlets. This year we have been able to place our catalogue system into operation. The library is now largely catalogued, complete with author and subject card files.

The library continues to build up its receipt of domestic and foreign Botanical and Horticultural publications through exchange for the Foundation's publication "Lasca Leaves."

HISTORICAL COMMITTEE — RESTORATION:

The Historical Committee, under the very active guidance of Mrs. Richard Y. Dakin, raised sufficient funds from private donations to actively commence the restoration program early this spring. The first of our historical buildings undergoing restoration is the "Lucky" Baldwin Casino. Mr. Maurice Block is directing this restoration. It is intended that by the spring of 1953 this building and its adjacent garden shall have been restored to its former splendor.

FINANCIAL REPORT: July 1, 1951 to June 30, 1952.

Total Income		
Memberships	$ 4,840.00	
Subventions—		
Los Angeles County	56,600.00	
Donations	4,015.94	
Rentals	4,047.50	
Publications	86.18	
		$ 69,589.62
Total Expenses		$ 59,261.02
Total Fixed Assets		$151,526.11
Total Non-Cash Contributions		
Books—pamphlets and reprints	$ 4,302.55	
Flower prints and paintings	5,677.00	
Arboretum equipment	8.00	
Land (Lux Estate)	100,000.00	
Labor (Administrative)	95.95	
Labor (Arboretum)	675.33	
Survey—Herbarium	8.50	
Plants and seeds	3,021.91	
Misc. materials and services	10,200.22	
		$123,989.46
Historical Committee Fund:		
Income—Donations		$ 21,472.06
Expense—Restoration work		$ 15,401.74
Garden Tour Fund:		
Income		3,034.77
Expense		147.92

FOUNDATION'S MEMBERSHIP:

Members as of June 30, 1952, as follows:

Annual Associate	76
Annual	173
Annual Contributing	40
Annual Sustaining	4
Life	11
Founder	2
Honorary Life	1
	307

49 members are garden club groups.

FLOWER SHOW-EXHIBITS:

A display of *Acacia* species was prepared as an educational exhibit at the International Flower Show at Inglewood during March 1952.

Mr. Spalding judged both for the San Marino Garden Club exhibit in April 1952, and at the Pasadena Flower Show during the Fall of 1951.

The Charles and Josephine Broughton memorial collection of flower paintings was on display in the Arboretum office in January, 1952 by request of the Azusa Woman's Club.

PUBLICATIONS:

Four issues of our quarterly publication Lasca Leaves have been published this year, six Lasca News issues have been sent to members at various intervals and eight News Releases sent to the papers.

ARTICLES PUBLISHED:

Dr. Seibert and Mr. Spalding have each had three articles published in various periodicals during this year.

TOUR OF RANCHOS AND ESTATES:

This tour, sponsored by the Foundation, ably planned by Mrs. William D. Shearer, was held on June 13, 14 and 15, 1952.

The following people very generously opened their estates for this event, which included a preview of the grounds of the Los Angeles State and County Arboretum:

"Rancho Descanso," La Cañada.

"El Mirador," Mr. and Mrs. Paul G. Hoffman, Pasadena.

"The Warner Estate," Mr. and Mrs. Thomas William Warner, Pasadena.

"An English Garden," Mrs. James Goodrich Newcomb, Pasadena.

The following clubs and organizations assisted in conducting this tour, the proceeds of which are to be used for a permanent plant labeling program at the Arboretum:

American Association of University Women—Arcadia.

American Begonia Society—San Gabriel Valley Branch.

Arcadia Leona Club.

Arcadia Woman's Club—Garden Section.

Automobile Club of Southern California.

Chevy Chase Estates Garden Club.

College Women's Club of Pasadena.

Forty Planners.

Herb Society.

Holly Sugar Company.

Home Garden Group.

Inter-County Garden Club.

La Cañada Valley Garden Club.

Las Jardineras.

Little Garden Club of Pasadena.

Los Angeles County Publicity Department.

Los Angeles Garden Club.

The Nestle Company.

Northwest Garden Club.

Ralph's Grocery Company.

San Marino Garden Club.

Sierra Madre Garden Club.

Garden Club of South Pasadena.

Van De Kamp's Bakeries.

PUBLICITY:

The Arboretum has received very fine publicity in most newspapers in this area, including several releases by Los Angeles County through the excellent cooperation of the County Board of Supervisors and Mr. Micciche.

TALKS:

During the past year 32 talks were given by members of the Arboretum staff. Of these talks Dr. Seibert gave 20, Mr. Spalding 9, Mr. Nelson 11, and Mr. Buck gave 1.

MOVIE STUDIOS:

The Arboretum grounds have been used by five studios, four television companies, and one religious unit.

RADIO PUBLICITY:

Dr. Russell J. Seibert, Director of the Arboretum, has been interviewed on three radio programs, by Maurie Webster. One for publicity on the Arboretum and the other two for information on plantings for parking lots and street trees.

DONATIONS OF SPECIAL MENTION:

Mrs. Beatrice Broughton Boore:
Eight-hundred twenty-nine Floral Prints and Plant Illustrations by Charles Broughton in addition to the Charles & Josephine Broughton Memorial Collection.

Mrs. Helen K. Krauss:
Helen K. Krauss Collection of Begonia References—25 Volumes.

Dr. George P. Lux:
One hundred fifty-four acre Estate.

Mrs. Lucille Rawleigh Meyer:
Two hundred sixty-seven Orchid and miscellaneous plants.

AMONG OUR NOTABLE VISITORS:

Mr. Joseph R. Knowland and Dr. Robert Burns of the State Park Commission; Newton B. Drury, Chief, Division of Beaches & Parks; John H. Covington, Sec'y. of State Park Commission; Col. Edwin C. Kelton, State Park Engineer, and Mr. Aubrey Drury, President of California Historical Society, visited our grounds in October 1951.

VOLUNTEER WORKERS:

The Trustees of the Foundation and the Director of the Arboretum wish to thank the following, who have given so generously of their time to help the Arboretum with special projects:

H. H. Benson, Talks.

Mr. and Mrs. Harry E. Bergstrom, Clipping Books.

Maurice Block, Restoration.

Donald S. Bolton, Installation of Latisglas.

Dr. George P. Lux, Care of Lux Arboretum Annex.

John C. Macfarland, Legal assistance—Lux Arboretum Annex.

Mrs. Tom McGah, Office hours.

W. Dan Quattlebaum, Weed control.

Mrs. Clara Ray, Office hours.

GROUP TOURS OF THE ARBORETUM:

This year more than 3000 individuals visited the Los Angeles State and County Arboretum on personally conducted educational tours, in parties ranging from ten to groups of over one-hundred.

On the tours, Mr. Nelson gave a brief history of colorful old Rancho Santa Anita, an elucidation of the past expansion of the Arboretum, the present work now in progress and an explanation of the future development and use of the property.

These groups were Garden Clubs, Girl Scouts, Boy Scouts, Blue Bird Girls, Cub Scouts, Brownies, School Classes, Womans Clubs, Audubon Societies and miscellaneous groups; totaling 88 groups in all. In addition to these groups, approximately twenty-six hundred people visited the Arboretum during the three day Garden Tour in June.

EXCHANGE PUBLICATIONS

We have established exchange relations with 105 institutions to date, which is an increase of 50 institutions over last year, 58 of which are in the United States and 47 in foreign countries including:

Africa (South)	Ecuador
Australia	England
Argentina	Honduras
Bolivia	Italy
Brazil	Indonesia
British Guiana	Mexico
Canada	New Zealand
Czechoslovakia	Peru
Colombia	Puerto Rico
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Valuable contributions of seeds and plants have been received from the following individuals, organizations and institutions:

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MISCELLANEOUS GIFTS RECEIVED BY THE ARBORETUM DURING THE PAST YEAR

(exclusive of money donations:)

ALUMINEX CORP.—12 *aluminum moldings 5 ft. long*
ANONYMOUS—*Miscellaneous pipe and fittings*
AUTO CLUB OF SOUTHERN CALIF.—*3000 Garden Tour maps*

AYRES, DR. SAMUEL, JR.,—*34 mounted specimens of Australian Wild Flowers*

BENT, HARRY S.—*Color print—"Cannon Ball Tree"*

CURTIS, MAURICE B.—*Notary Public services donated*

LOS ANGELES TURF CLUB—*Sixty tons of bedding straw*

LUX, CATHERINE CLAIRE –*Fifteen Forest Tree Reproductions*

MACFARLAND, JOHN C.—*Los Angeles County Recorder fee for Lux Arboretum Annex*

MARTIN, R. SANFORD—*2 sacks of "Humisite"*

MONSANTO CHEMICAL CO.—*4700 pounds of "Krilium," 1000 pounds of Vigoro*

RANCHO SANTA ANITA, INC.,—*500 planting pots*

SANTA ANITA FLOOR COVERING CO.—*10 pieces of Asphalt Tile and paste*

SCHERY, DR. ROBERT—*2 photographs of Cavanillesia species*

SHELLMAR PRODUCTS CORP.—*Shellene tubing*

SOUTHERN CALIFORNIA GREENHOUSE MFRS.—*Eight loads of Redwood sawdust*

TITLE INSURANCE CO.—*Title Search and Plat preparation for Lux Arboretum Annex*

TRIANGLE STEELE & SUPPLY CO.—*12 sheets of Alsonite*

VERDOORN, DR. FRANS—*1 Electro plate cut—"Lasca News"*

WALLACE, MRS. MARGUERITE C. AND JAMIE—*11 turtles*

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California Arboretum Foundation, Inc., operates the Los Angeles State and County Arboretum under agreement with the Los Angeles County Board of Supervisors. The property belongs to the State of California, which has leased it to the County of Los Angeles for fifty years. The County of Los Angeles is providing for the Capital improvement of the grounds and has provided for research projects of interest to the County.

Maintenance and operational funds are, however, expected to be raised by the Arboretum Foundation through memberships, donations, endowments, and gifts. All contributions are deductible under Federal Income Tax Laws.

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Annual Associate Membership	$ 5.00
Annual Membership	10.00
Annual Contributing Membership	25.00
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Checks should be made payable to the California Arboretum Foundation, Inc., and sent to our headquarters at 291 North Old Ranch Road, Arcadia, Calif. Phone DOuglas 7-3444.

Donations for Historical Restorations should be made payable to California Arboretum Foundation, Inc., Historical Fund.

The Los Angeles State and County Arboretum is operated by California Arboretum Foundation, Inc.. a non-profit corporation. The Foundation is developing and managing the Arboretum under an agreement with the Los Angeles County Board of Supervisors. Title to the 120 acres of property is in the State of California, which has leased it to Los Angeles County for fifty years.

Construction operations are actively commenced by the County of Los Angeles in accordance with the master plan of the Foundation. Because of safety hazards the Arboretum is closed to the public during construction. Interested clubs may arrange for group conducted tours of the grounds by calling the Arboretum Office. DOuglas 7-3444.

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Aug 53

Lasca Leaves

The Arboretum's New Lath

MISSOURI BOTANICAL GARDEN
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LASCA LEAVES

Quarterly Journal of the

LOS ANGELES STATE *and* COUNTY ARBORETUM

A CALIFORNIA ARBORETUM FOUNDATION, INC. PUBLICATION

R. J. SEIBERT, *Editor*

VOL. III JANUARY, 1953 No. 1

THE LASCA LIBRARY

Janet Wright

"The only true equalizers in the world are books . . ."

Even "dirt gardeners" need books from time to time. It may be only a seed catalogue, but when it is wanted it is wanted quickly and without delay. The function of a library, however small or large, is to make available its reading and reference material with the least involvement of time or trouble.

To this end, generally, LASCA Library is being formed. Specifically, however, other considerations come into the picture. Operations within the scope of an Arboretum are horticultural. L. H. Bailey in his definition of "horticulture" reminds us of its relationship to the larger realm of agriculture (literally, "tending of the fields"), and to the smaller realm of gardening (from the Anglo-Saxon *gyrdan*, to inclose). Etymologically horticulture (**hortus**, garden; *colere*, to care for, or cultivate) and gardening are equivalent; but usage of word and practice of operation have brought about the distinction we recognize today: horticulture embracing operations within an enclosure on a large scale (e.g. plant nurseries, botanical gardens, arboretums); while gardening refers to care of home grounds.

Botany, the science of plants, may also be said to embrace horticulture—or vice versa, depending upon the viewpoint But where one ends and the other begins is more a fine point of distinction than a boundary, since both botanist and horticulturist have found that they have an interdependence that is undeniable and altogether desirable to acknowledge and foster.

Why do these definitions affect the setting up of a library? Because "it is not easy to organize a horticultural library on the basis of a general classification." The major horticultural library in this country, the library of the Massachusetts Horticultural Society, Boston, recognized this to the dynamic point of changing its original scheme to one which is expected to be properly flexible toward meeting demands made upon it by "a mixed professional and amateur clientele"—similar to that which will one day use LASCA Library.

Miss Dorothy Manks, Librarian of the Massachusetts Horticultural Library, devised the new classification scheme for horticulture, now being used there. The current Director of Los Angeles State and County Arboretum, Dr. Russell J. Seibert, in conference with other staff members, carefully considered this scheme in anticipation of the needs and uses of the library of this institution. So well did it meet these anticipated demands that in adapted form it was adopted as the scheme for LASCA Library.

For both present and future reference, the divisions of this scheme are roughly outlined below:

A. HORTICULTURE: including reference to compendiums, horticultural societies, exhibitions, yearbooks, bibliographies; encyclopedias, catalogues, seed lists; nursery management, propagation, cultural techniques, research methods, history.

B. ORNAMENTAL PLANTS—CULTURE: greenhouse techniques and other indoor culture; floriculture; garden and plant types; monographs (e.g. lilies, dahlias, orchids, etc.)

C. FOOD PLANTS—CULTURE: history, bibliography; vegetable growing, including chemical culture, processing (dehydration, freezing, etc.), marketing, plant types (e.g. stem, root, leaf, seeds, mushrooms, etc.); herb gardening; fruit culture, special techniques;

fruit types (pome, nuts, berries, citrus, etc.); monographs; cereals, forage crops.

D. AGRICULTURE: compendiums, bibliography; USDA Yearbooks and Plant Introduction Lists (U. S. Dept. of Agriculture); education, theory and practice; agricultural engineering, including reclamation and water problems, surveying, etc.; law and legislation; monographs.

E. FORESTRY: compendiums, congresses, USDA Forestry Service; bibliography, history; museums, experimental areas; silviculture, afforestation and reforestation, protection and preservation; lumber industry; administration, legislation.

F. LANDSCAPE ARCHITECTURE: professional practice, congresses, exhibitions; principles of design; forms of design: evolution of design; elements and materials; decorative characters and ecological conditions; structures; gardens of all countries.

G. BOTANY: laboratory manuals, herbaria; teaching methods; history, bibliography; plant names; botanical institutions, experiment stations, arboretums; biological aspects; economic botany; descriptive and systematic works; monographs, arranged alphabetically by family and genera.

H. FLORA: Plant geography; arrangement alphabetically by country in each continent.

L. AUXILIARY SCIENCES: metallurgy, meteorology; soil sciences; plant health (environment factors, diseases, plant protection).

N. GENERAL SCIENCES: mathematical and physical sciences; biological sciences, natural history; anthropology.

P. SOCIAL SCIENCES; ECONOMICS: administration, government, legislation; economics, education; home and community.

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Z. PERIODICALS (or SERIALS): arranged alphabetically by geographical location, (same as arrangement for *Flora*).

"The art of knowing what to leave undone is quite as important as the art of knowing what to do" is a maxim patently applicable in a librarian's work, for the field of operation is sometimes appallingly elastic. Shelves are likely to become burdened with material that is to general observation "dead" but which may hold the nugget of information that a researcher has spent many an effort to track down. Potential constructive use of any library has as a functioning axis the card catalogue. It is necessary that this catalogue be geared to the special uses of its particular library, but also to provide access of information to the vaguer seeker after knowledge. The well-disciplined minds of Aristotle and Bacon long ago furnished adequate outlines of knowledge to follow, and librarians, more than many another scholar, have been warmly grateful to them.

The card catalogue of LASCA Library is still in process of being even roughly adequate. The accession classifying and cataloguing of books has gone along at a pedestrian pace to be sure; it has received the attention of intelligent and willing volunteers as well as experienced and trained staff members, but to date, it has not yet come into its own by virtue of having a full-time trained Librarian, in charge. When so mammoth an undertaking as the birth of a botanical garden or arboretum is in process, it and all of its appurtenant activities do not spring into full being and stride all at once; but like a tree from small seed, it grows, cell by cells, into ultimate significance. The Library is in an embryonic but healthy state of growth, adding each day its small measure of orderly development to the public institution known as Los Angeles State and County Arboretum in Arcadia, California; adding, too, it is hoped, to that "incalculable increase of knowledge" that "rolls over the world with every century." Agnes Repplier, astute poet here quoted, sets the tone for every true seeker after knowledge:

"Obviously an educated man, even a very highly educated man, must be content in the main with a modest and wise ignorance."

FIRST OF THE PERMANENT ARBORETUM BUILDINGS

Our cover illustration proudly presents the first of our permanent new buildings in permanent position,—the lath house, located at the northeast corner of the Arboretum grounds. It is the forerunner of the other Arboretum buildings which will be constructed along the east border of our acreage facing Baldwin Avenue starting at Colorado Boulevard and extending south to the future main entrance to the Arboretum.

This lath house is constructed of aluminum lath. It consists of one unit 40′ x 120′ long and 8′ high, plus another attached unit 30′ x 60′ and 12′ high. One half of the 8′ tall section comprised our original unit built in August 1949. During the period of its use, very satisfactory results have been recorded; the aluminum has proved its good lasting quality with scarcely any maintenance consideration. Furthermore, the unit was both easy and economical to move to the new location and adding it to the new section presented a minimum of structural problems.

The area on which the new lath house is constructed provides sufficient space for the future adding of another 40′ x 120′ unit when such additional facilities shall be required. A good view of this area and the new structure may be had from Colorado Boulevard a few hundred yards east of North Old Ranch Road which leads south to the present temporary entrance to the grounds.

A POLYPLOID FORM OF FELICIA AMELLOIDES:

Developed with Colchicine

W. Quinn Buck

Early in January of 1952 seedlings of *Felicia amelloides* were treated immediately after germination with colchicine solution applied to the plumule. Soon some of the seedlings showed that they were affected by the alkaloid, and when they were lined out in the field nursery in April, the more obviously affected ones were planted first in the row.

The plants most changed developed leaves that were larger, thicker, rounder, and more bristly; the growth was coarsened and the mature plants were larger. Flowering of these affected plants was considerably retarded as compared with the normal seedlings. The normal ones produced many flowers by early fall, whereas the affected plants produced few flowers until the cool days of November, at which time they began to show their true flower characters.

Flowers produced by two plants selected from among the affected ones exhibit the characteristics of polyploids. The flowers are larger and better in color, and they are produced on thick, stiff stems. Few seed have been set so far, but it is hoped that sufficient seed will mature to secure a polyploid strain from which selections for color, and flower and plant types can be made. These two clones will be propagated from cuttings to give additional plants from which to grow seed.

Upper flower is from a normal diploid form of FELICIA AMELLOIDES; lower flower is from one of selected colchicine-induced polyploids.

Typical Examples of Transparent Plastic Labels as attached to trees in the Los Angeles State and County Arboretum

SOMETHING DIFFERENT IN TREE LABELS

Russell J. Seibert

The question of materials for the preparation of tree and shrub labels, either permanent or semi-permanent, is one which has never been solved satisfactorily. Types of labels in common usage do not answer all scores-of-perfect from the viewpoint of serviceability, economy, durability, legibility, beauty or aesthetic value.

In most cases, the label that could be considered satisfactory in all other respects, has the disadvantage of being a decorative detraction from the specimen so adorned. It is very easy to render a botanic garden of labels so conspicuous as to produce an over-all effect wholly unattractive.

It was perhaps ten years ago that the writer was impressed with certain tree labels in use at the Fairchild Tropical Garden in southern Florida. So effective were these engraved lucite labels from the standpoint of legibility as well as unobstrusive aspect that decision was made to investigate this material further when time and opportunity permitted.

Our Arboretum Foundation provided such an opportunity when it agreed that proceeds from the Tour of Ranchos and Estates last June, held in benefit of the Arboretum, should be used for the purchase of materials and equipment for the cutting and engraving of permanent labels for the trees and shrubs on the Arboretum grounds.

The engraving machine now in use consists of an electric-driven cutter attached to a pantograph from which copy may be set up, and thence transposed and cut into the label medium. In the case of lucite, plexiglass or other transparent plastic, the letters are cut into the reverse side through use of reversed copy type. The letters become clearly visible because of refracted light which makes them stand out through the clear transparent material. Examples of the labels now being put into use at the Arboretum are illustrated in the accompanying plate.

The same pantograph cutter may be used to make a variety of types of labels —i.e. for laminated plastic, wood, soft metal, etc.—by employing normal rather than reversed copy type. At present, however, consensus of opinion is in favor of the clear transparent plastic because it produces effective neat economical labels which enhance rather than detract from, the particular specimens labelled.

A KEEPSAKE

Dr. Frans Verdoorn announces that the following is available free, on request, from the *Chronica Botanica Co.*, Waltham, Massachusetts:

"My Great Oak Tree—and other Poems" by Liberty Hyde Bailey.

L. H. Bailey is well known to all students of botany and horticulture as the author of many a reference work in these fields. He is less well known as a poet,—a discerning and apperceptive one whose heart is full of understanding as his mind is full of knowledge, of the natural world. Those who send for the gratuitous offerings will be uncommonly enriched to share thus the thoughts of this eminent plantsman and horticulturist. An inkling of them:

"How tired the tropic seemed
As tired as one who slept and dreamed!
. . . . . .
And then there breathed a witching day
When old growths went and new growths came
Like a verdant brooding flame,
And pulses crept;
The bamboos melted at their tips
And new tastes mounted to the lips,
New rain-myths swept
The tropic clean
Joined sky and earth and all between,
And senses roused in bush and lakes
As one so gently gently wakes
He had not known he slept."

"Undertone," the last poem speaks L. H. Bailey's philosophy:

"The peace of the winds is my undertone—
I move with the crowd, but I live alone."

NOVEMBER PROMISE

H. H. Benson

Yesterday it rained—and everywhere
A joyous rhythm seemed to wake
Within each tired blade of grass—
The flushed and eager urge of Spring,
  For now at last
Their thirsty days were done.

Then hopefully, 'neath clearing skies
A grateful world takes heart again,
And every tree and lowly bush
Seems washed and clean
  And proudly stands
Holding bright faces toward the sun.

The distant mountains' somber heights
All seem alive with shadowy shapes
As overhead the tumbling clouds
Play hide and seek with wind and sun;
  They too are glad
That yesterday—it rained!

GROWING NOTES

George H. Spalding

One of the most interesting phases of our program at Los Angeles State and County Arboretum is the growing and testing of new plants from all over the world. "Growing Notes," from time to time, will be a report on some of the new plants and how they are performing for us here. This issue is the first of these reports. We hope that by reporting on worthwhile new plants the nurseries will begin to stock them and their availability will enrich your gardens.

Dombeya dregeana

The genus *Dombeya* was named in honor of Joseph Dombey, a French botanist of the 18th Century who accompanied Ruiz and Pavon in Chile and Peru. This genus belongs to the family *Sterculiaceae* and consists of approximately one hundred species. The books say that this genus consists of evergreen trees and shrubs but in this part of Southern California at least, (Arcadia) some species are deciduous or semi-evergreen.

Dombeya dregeana has been grown here for two years and gives promise of being a very valuable shrub for garden use. Our seed came from the National Botanical Garden, Kirstenbosch, South Africa. Planted September, 1950 in a mixture of equal parts of Georgia peat and sponge-rok, it germinated in a week. The young plants were carried on in cans and set out in the spring of 1952. (The first winter they were kept in the greenhouse). In fact one bloomed in a gallon can in the greenhouse. At the present writing (December, 1952), plants set in permanent position last spring are six to seven feet high and four to five feet wide and are in full bloom. The flower heads are smaller than the well known *Dombeya Wallichii* and much more graceful. They are largely hidden by the foliage but they show through here and there, arousing interest and creating the desire to examine the plant more closely. In most instances the flowers are pure white although one or two individuals have a red spot at the inside base of the petals. They have a definite fragrance which is hard to define. This fall the foliage, which in summer is a good dark green, has taken on a beautiful deep red color reminiscent of the eastern maples. This is only partial; the balance of the plant remains a good green. The plants suffered moderate frost damage at 27° last winter, completely defoliating. However, no permanent damage occurred and the plants recovered rapidly and completely.

Dodonaea viscosa purpurea

The genus *Dodonaea* consists of approximately fifty species of trees and shrubs, mostly Australian although a few species come from Hawaii, North America and Africa. It belongs to the family *Sapindaceae*, which contains several outstanding ornamentals, and was named for Rembert Dodoens (Dodonaeus) c. 1518-85, royal Flemish physician and writer on plants.

Dodonaea viscosa purpurea is one of the finest of the genus, at least in this part of Southern California. Seed was obtained from Australia and planted in October 1950 in our usual seed mixture (G.p. and

S.r. 50-50). It germinated in fifteen days and the seedlings came along very rapidly. Plants were set out in the field nursery in May 1951 and at the present writing are clothed with foliage from the ground up and have a very pleasing rounded shape. The foliage is a rich plum-purple during the cooler months, greening slightly during the summer. So far, it has been completely free of disease and insect pests. It grows almost continuously so that the soft growth was slightly browned at 27°. However, the injury was extremely slight and within a month no visible signs of it were left. We are trying to propagate it from cuttings but so far without success. This is probably not too important because even though it is a purple-leaved variety it comes about 98% true from seed. Our plants have not flowered so far, but they are reported to have attractive winged seed pods. At two years of age, our plants are six to seven feet high and almost as broad. *Dodonaea viscosa purpurea* shows every promise of becoming one of the outstanding ornamentals for Southern California gardens. We recommend it highly.

Goodia lotifolia

The genus *Goodia* consists of two evergreen shrubs and belongs to the Pea family (*Leguminosae*). It is native to Australia and was named in honor of Peter Good, a botanical collector in Australia. There seems to be some disagreement as to whether there are two species or a species and a variety. The subject of this note, *Goodia lotifolia* is a very attractive, rounded, evergreen shrub. Seed received from Australia was planted in November 1950. After being given the boiling water treatment, (see Lasca Leaves Vol. I, No. 1, p. 7), germination started in seven to ten days. The plants were planted in the field nursery in October 1951. Growth was only fair in cans but when planted out in the ground it was excellent. One fact established in growing *Goodia lotifolia* is that in containers watering is most important; overwatering is disastrous, also the plants should be planted out as soon as possible. In 1952 the field plants had reached a size of four to five feet high and four feet wide. They were loaded with small pale yellow pea-like flowers for about a month to six weeks. It is not a spectacular shrub but an excellent foliage subject and very attractive in bloom. No frost damage occurred at 27°. Maximum height is supposed to be six feet.

ACACIA SALIGNA

Golden Wreath Wattle

Acacia is a very old name in botany and was used by Dioscorides in his writings. The genus consists of over five-hundred species most numerous in Australia but scattered also over other warmer regions of the world. All true Acacias are evergreen trees or shrubs. The variation in type of foliage is great and the difference between juvenile and mature foliage on some of the species is very noticeable. Some of our most beautiful flowering trees and shrubs are found in this genus.

Acacia saligna is one of the outstanding species for beauty. It is a native of Western Australia. Three plants were received in gallon cans in 1949. They were about a year old and eighteen to twenty-four inches in height. Planted out in front of the Arboretum administration building in June 1950 they are now (December 1952) fifteen to twenty feet tall and ten feet wide with beautifully rounded heads. The young plants need to be kept free of sucker growth. If the leaves are left on the main stem and side branches headed back to a foot or so until the desired height is reached, the main trunk will be greatly strengthened and will increase rapidly in caliper. Our trees flowered heavily in March 1952 and were a breath-taking sight. Here is a flowering tree which reaches a good size in three to four years from seed and has very large, ball-shaped, golden yellow flowers. It does not seem to be particular as to soil and we have found it easily grown. It should be noted that while many acacias will thrive under adverse conditions and some must have them, good soil and adequate water make for better growth and earlier flowering of many species. *A. saligna* responds to good care.

ACACIA VESTITA

Hairy Wattle

This acacia is one of the writer's favorites. The foliage resembles that of *A. cultriformis* but so far the plant is far more graceful in habit of growth. Its other common name "Weeping Boree" is very descriptive.

Seed received from Australia was planted in April 1950 after being given the boiling water treatment. (Lasca Leaves Vol. I, No. 1). It germinated in seven days and the plants came along easily. The juvenile foliage is bi-pinnately compound, the mature foliage is in the form of phyllodia, triangular in shape and a soft grey-green. Several plants were set out in several locations on the Arboretum grounds in December 1951. Two plants were put at the base of a large *Eucalyptus globulus* and three in the open field. Subsequent behavior of the five plants seems to indicate that this acacia thrives under adverse conditions. At this writing the plants near the *Eucalyptus globulus* are approximately five to six feet high and nearly as wide. They have a graceful weeping form and are loaded with flower buds. The color is good and the plants extremely vigorous. All this in spite of the competition of Eucalyptus roots and a hot sunny location. Ample water was provided but here again the Eucalyptus undoubtedly absorbed most of the water. In comparison the three plants of *Acacia vestita* in the field were planted in rich dark soil on the heavy side. Ample moisture was provided and the exposure is open, sunny, and there is not competition from other plants. These plants are only two and one-half to three feet tall and about as broad. The color is poor and there are quite a few dead branches on the plants.

The conclusions we have drawn from the above facts are that *Acacia vestita* grows best in a hot sunny location with not too much water. Probably an open sandy soil is best but it is probably tolerant of heavier soils if watering is decreased accordingly.

LASCA LEAVES

Readers of *LASCA Leaves* will be interested to note that plans are being formulated wherein the Southern California Horticultural Institute will join forces with California Arboretum Foundation, Inc. to expand the format of this publication.

Recollection will be made that it was through the efforts of Southern California Institute originally that the Los Angeles State and County Arboretum was founded. Therefore, it now seems appropriate that the two closely linked institutions should combine their resources, to be released through the channel of *LASCA Leaves* as their joint official quarterly publication, in the interest of horticulture as carried on in southern California.

IN MEMORY

John Francis Douglas

October 30, 1874 - November 29, 1952

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The Los Angeles State and County Arboretum is operated by California Arboretum Foundation, Inc., a non-profit corporation. The Foundation is developing and managing the Arboretum under an agreement with the Los Angeles County Board of Supervisors. Title to the 120 acres of property is in the State of California, which has leased it to Los Angeles County for fifty years.

Construction operations are actively commenced by the County of Los Angeles in accordance with the master plan of the Foundation. Because of safety hazards the Arboretum is closed to the public during construction. Interested clubs may arrange for group conducted tours of the grounds by calling the Arboretum Office, DOuglas 7-3444.

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SOUTHERN CALIFORNIA, "THE PARADISE OF AMERICA"

SAMUEL AYRES, JR.

President of the Board of Trustees, California Arboretum Foundation, Inc.

The *California Arboretum Foundation, Inc.*, in joining forces with the *Southern California Horticultural Institute* for the purpose of publishing an augmented *Lasca Leaves*, looks forward with anticipation to a new era of expanding interest in horticulture in Southern California.

Since the Los Angeles State and County Arboretum was established through the efforts of the Institute in fulfillment of one of its major objectives, and since the activities of both organizations revolve about the same central theme, it is only logical to draw upon the talents and resources of both groups in the publication of a first-class horticultural journal appealing to the interests and needs of this climatically unique area of the United States.

As President of the Board of Trustees of *California Arboretum Foundation, Inc.*, I extend greetings to all readers of *Lasca Leaves* and cordially invite you to become permanent subscribers and members of the Arboretum. The Editor will have more to say regarding the specific plans for *Lasca Leaves*, and I am quite certain that no one who is interested in plants and gardening (and who in Southern California isn't?) will want to miss a single issue.

For those readers who are not already members of the Arboretum, I would say that the primary purpose in creating the Arboretum was to establish a botanic garden which would serve as a practical demonstration to all Southern California of the ornamental plants which can be successfully grown in this area, including both old and new introductions, to the end that more beauty will find its way into our gardens, our parks, and along our streets and about our public buildings. With the proper selection and planting of suitable flowering trees and shrubs, an effect could be created which would compare favorably with the glamour of Hawaii, "The Paradise of the Pacific," and which could easily earn for Southern California the title of "Paradise of America." Most of those living in this area were not born here but came from regions of severe winters. Instead of yearning for the plants of "back east" which in many instances are not especially suited to this climatic zone, they should be stimulated to desire the more colorful and exotic plants which can be grown easily in Southern California and which can make this area distinctly and beautifully different from any other part of the country.

Over the years many fine new species of plants have been introduced into California by private collectors and planted on large estates, only to be lost when the owner died or the estate was sold or subdivided. It is anticipated that the Arboretum will become a permanent living exhibition of the best ornamental plants from all over the world which are adaptable to our conditions.

The plantings in the Arboretum will be arranged both scientifically and artistically in natural groupings and will be accurately labelled. Many interesting features are being formulated by Dr. Seibert, the Director.

It is planned to utilize the Arboretum as a horticultural center for Southern California, and there will be facilities for various plant societies to hold meetings and exhibits. A comprehensive horticultural and botanical library and herbarium are being built up. A school for gardeners is being planned. A considerable amount of research is already under way and more will be undertaken as soon as construction permits. Special emphasis will be placed on the introduction and study of ornamental plants with low water requirements and on the problem of improving frost-tolerance.

The historical buildings on the property are being restored and will be preserved as mementos of the past. The Arboretum constitutes a natural bird sanctuary, and as in the past, it will in the future continue to interest the Audubon Societies.

It is regretted that the Arboretum must remain closed to the public during the period of major construction. It is hoped that within another year or possibly a little more, it will be possible to open the grounds. In the meantime groups may be taken on conducted tours by special arrangements with the Director.

Finally, although the capital improvements are being financed by the County of Los Angeles, there is a great need of additional funds for operation and development and for many special projects. Various classes of membership are available and include special privileges such as subscription to *Lasca Leaves* and other publications, participation in the annual distribution of surplus seeds and plants, etc. Donations and bequests for special projects and for the Endowment Fund would be most welcome.

Lasca Leaves will keep you informed of the progress at the Arboretum and will include all that is new and interesting in the world of horticulture in Southern California with special articles prepared by experts in their respective fields as well as notices of special plant society meetings, flower shows, and other news notes.

EXPANDING OUR HORTICULTURAL HORIZONS

FRED W. ROEWEKAMP

President, Southern California Horticultural Institute

On November 6, 1935, a group of men filled with vision and ambition for the cultural growth of our beautiful Southland, banded together to promote an educational program for the advancement of interest in horticulture in Los Angeles communities. They realized the wealth of plant material to be brought to the attention of the average home-owner for individual pleasure as well as for civic benefit. Thus, quite simply, was born the Southern California Horticultural Institute.

From its small beginning this organization has expanded to other projects, complementing one another. Much wishful thinking at first was done about a new botanic garden in the southland, about flower shows, plant societies, garden clubs, and a worthy horticultural publication to serve them all.

Review of events of the past few years show that much has been accomplished in these fields. We are proud to recognize in the *California Arboretum Foundation, Inc.*, a valuable step forward in the field of horticulture, and the publication, *Lasca Leaves*, which they started, is already an inspiration to its readers.

In joining forces with the *California Arboretum Foundation* in augmenting this publication, we anticipate a broadening of both our mutual interests and the creation of a wider horizon for its readers. *Lasca Leaves* should prove to be a common meeting ground for the expression and dissemination of horticultural knowledge, and distinctly a benefit to members of both institutions. Through it we will learn of new work in progress and share the cultural pleasure and profit of being "plant pioneers."

We who have long been working toward a more beauteous and colorful Southern California are well aware of the possibilities of our versatile climate and of the wealth of plant material therefore afforded us. And we realize that in our hands lies the horticultural education of our city residents, as well as the promoting of pride in our city beautification program.

We look forward to the day when the Arboretum can share more fully in this by opening its grounds to the public for both enjoyment and educational benefits. Those who to some extent are familiar with these grounds pronounce them beautiful; those who have not yet seen them have indeed a treat in store, because of its appeal to nature lovers, because of its wonderful possibilities horticulturally, and because of the historic interest imbedded there.

The common goal of helping to create beauty will bring its own reward of happiness to all who participate in these combined purposes of the Southern California Horticultural Institute and California Arboretum Foundation.

CALIFORNIA INTERNATIONAL FLOWER SHOW

Fred W. Roewekamp

In the fall of 1946 William A. Rodman, formerly general manager of "Gardens on Parade" at the New World's Fair, and Roy F. Wilcox, prominent nurseryman of Montebello, California, conferred about the possibility of staging a large flower show in Los Angeles or vicinity. Spring of 1948 was the date envisioned for its inception.

As a founder and director of Hollywood Turf Club, Mr. Wilcox arranged a meeting between Mr. Rodman and two officers of the club, Mr. J. F. Mackenzie, General Manager, and Mr. J. D. Stewart, Assistant General Manager. The result was a proposal to the Club's Board for use of the grounds of Hollywood Park for a Flower Show the spring of 1949. Approval was voted offering buildings and facilities without rental fees.

Meanwhile, as tentative plans went ahead, members of the Southern California Horticultural Institute, Inc., and of the Southern California Floral Association met. The forming of a Flower Show Executive Committee resulted, Mr. Wilcox elected to General Chairmanship, Mr. Rodman, as General Manager. Out of subsequent meetings came the great California International Flower Show whose 4th presentation this year will be numbered among the leading flower shows of the country.

Nurserymen, pot-plant growers, landscape architects, retail florists, garden clubs, and horticultural societies showed

much enthusiasm, and response for exhibiting space was most encouraging. An underwriting program of sound basis was planned. Guarantors could only be members in the industry and upward of $180,000 was pledged for the opening show in 1949.

In 1950 all plans for a second show had to be abandoned because of a fire that had swept the buildings and grounds. But in 1951 the structure had been rebuilt and the second show materialized, rivalling the first in both enthusiasm and final success.

Each year, the California International Flower Show must work a miracle in order to match and try to surpass the previous exposition, and each year the Flower Show brings forth new wonders. This miracle is wrought by men and women who love the beauty of flowers and gardens, and who are willing to devote months of work and planning to make this show one of the finest exhibitions in the world.

As you enter the Exhibition buildings, a scene of breathtaking beauty will unfold, opening up one vista of loveliness after another. Design, originality of theme, beauty and quality of floral material, will capture the attention of every one of the 200,000 visitors that past attendance has led us to expect this season. Everyone will find inspiration for the development of their own gardens and ideas and materials for their individual uses. Nurserymen, cut-flower and orchid growers, retail florists and garden clubs, as well as horticultural societies, conspire to surpass their past offerings and successes.

Floral material used in the displays will consist of flowers, flowering shrubs and trees, cactus and succulent plants, dwarf, potted and tropical plants, and an estimated 50,000 orchids of all types. Anthuriums in full bloom, several thousand tulips, lily-of-the-valley, daffodils, roses, cinerarias, primulas, caladiums, philodendrons, rhododendrons, hydrangeas, camellias, in all varieties and colors, and countless azaleas, as well as the orchids dispersed among many of the exhibits will be major features in the exhibiting.

Feature gardens are expected to be more beautiful than ever before and will be greater in number. Thirty-eight such gardens will run the gamut of ideas: woodland and tropical; patio and outdoor living-rooms; backyard gardens; landscaped homes; water gardens and the use of pools and waterfalls; and many other beautiful and unusual treatments to challenge the viewers' interests. One nursery is constructing a completely landscaped New England village.

This year the entire floor plan is altered. Exhibits are set in winding walk-ways rather than in long, straight aisles as in the past. This permits designers and landscape architects opportunity to give all exhibits fuller visibility and better scope for striking displays. The first floor of the exhibition will again house the spectacular gardens, international exhibits, garden club and floral society exhibits, private estate exhibits, the shopping center, information booth, cafeteria and side-walk cafe. The Education Group, formerly represented on the second floor, has been assigned to a preferred location on the first floor. This group, comprising twenty schools, aboreta, museums, and conferences, will again present a splendid showing of informative displays; in addition, they will stage a great unified garden depicting a floral scene in South Africa using typical background and native material that also grows well in Southern California. Adjacent to this exhibit will be provided a thrilling setting for the newly adopted official flower of our city, the Bird-of-Paradise, *Strelitzia reginae*, by the organization, "Los Angeles Beautiful."

The International Section this year promises both more and better displays than last year. Expansion of air freight services now makes it possible for nations to present some of the most exciting blooms of their lands; and counsuls and trade commissioners have been working to develop outstanding exhibits typical of their homelands. Spaces are already under construction for Canada, the Republic of China, Great Britain, Germany, Israel, Italy, Japan, Mexico, the Netherlands, Philippines, Spain, Sweden, and Switzerland.

Garden Clubs on Parade is the theme

of the many clubs and societies that are staging area exhibits. Here, selected with discrimination from the very best, will be exquisite miniature-exhibits, numerous artistic flower arrangements, specimen blooms, and a number of fully developed garden sections illustrating preferred uses of varied flowers, shrubs, flowering trees, and succulents.

The ever-popular Shopping Center is enlarged considerably this year. A veritable world's fair of garden materials and aids, including all forms of potted plants, seeds and bulbs, tropicals and succulents, fertilizers and sprays, garden accessories, wall and fence materials, and decorative stone and brick work; plus a photographic supply studio carrying films and flashbulbs as well as color transparencies of many of the exhibits, for souvenirs—all these and others may be found in the Shopping Center.

During the evenings, the auditorium stage will be under the direction of the Women's Division of the Los Angeles Chamber of Commerce. Again popular special events will be presented, including songs, dances, and costumes of our foreign exhibitors. Golden Wedding Day, Hawaiian Night, Garden Fashions, Photographers' Day and many more such events of past years will be matched by attractions of stellar quality.

The Second Floor of the Flower Show will, as always, be the mecca of the true flower-lover and the horticulturist. There, vast exhibits of cut flowers, and the artistic and original presentations of retail florists, will be found, as well as the most appealing art exhibit yet presented by the Show, including an exhibit of some of the paintings of "Grandma Moses."

For the benefit of exhibitors, the following information will be of special interest; prize awards are made in several classifications. For Nurserymen, Landscape Architects and Landscape Contractors, the schedule is divided as follows: Landscape Exhibits, 21 classes with two top awards of $1,200. A gold medal will be awarded to the most outstanding exhibit and nine trophies will be awarded for merit in design and arrangement, cultural excellence and beauty and originality of theme. Commercial Growers of Pot Plants, 20 classes with highest award $300; Commercial Growers of Orchids, 11 classes with high award of $2,500. and a trophy award for excellent plant material and skill in display.

For Cut Flowers, the schedule is for carnations, anemones, gardenias, gladiolus, iris, daisies, larkspur, snapdragons, roses, tulips, bird-of-paradise, ranunculus, callas, stocks, delphinum, sweet peas, general displays and miscellaneous flowers, 118 classes, awards up to $600. The Retail Florists Division will hold three separate stagings, 64 classes, with awards up to $750. for general theme displays. Garden Club entries will be divided into garden plots, flower arrangements, and miniature arrangements with nine awards up to $100.

A gold medal will be awarded to the most outstanding exhibit in the Retail Florists and Cut Flower Growers section. Retail Florists will also be awarded 19 trophies for exceptional merit and design.

An innovation of this year's show will be the awarding of gold medals for the outstanding landscaped garden; for the best cut flower exhibit; or finest retail florist display.

Preceding the official opening will be an invitational premiere on the evening of March 13, conducted by the Assistance League of Southern California for the benefit of their charities. Information about this premiere can be obtained by calling the Assistance League office.

Hollywood Park again provides the setting for this floral fairyland which will once more delight its wide audience. Each year the board of directors of the Hollywood Turf Club contribute their total facilities to the Flower Show. The show occupies some seven acres of space, all indoors; consisting of the Club House and Pavilion, and covering two floors. Visitors have the convenience of an 18,000-car parking area adjacent to the main building; this assures ample space for even the busiest periods.

The Show officially opens its doors at 10:30 a.m. on Saturday, March 14, and

remains open from 10:30 a.m. to 10:30 p.m. through March 22. Admission charge is $1.00 for adults, 25c for children, plus tax. Public transportation will be provided by Los Angeles Transit Company.

General Chairman of the Show is Roy F. Wilcox, noted nurseryman of Montebello and Santa Barbara; Manfred Meyberg of Los Angeles is executive chairman. William A. Rodman has been general manager of the Show since its inception. Attendance last year was recorded as 192,000; with expectation this year of exceeding 200,000.

The International Flower Show at Hollywood Park is an annual civic event sponsored by the Southern California Floral Association and Southern California Horticultural Institute, non-profit organizations dedicated to the advancement of horticulture and floriculture in Southern California. It is endorsed by leading civic organizations.

A featured garden of the International Flower Show this year will be presented by the Men's Garden Club of Los Angeles, an authentic reproduction of the Coronation Coach to be used by Queen Elizabeth at the June Coronation in London. Exquisitely made in full color, the coach and equipage extends 35 feet in length and will be complete with eight horses, 18 costumed attendants and a beautiful figure representing the Queen. The background setting will depict an English floral scene en route from Buckingham Palace to Westminster Abbey.

* * *

"We"—the Editor

"We" refers chiefly to the advisory Editorial Committee of six members and to the able Editorial Board of some eighteen members. These offices are in no way a sinecure. for those individuals who hold them will serve readers of *Lasca Leaves* much of the meat to be offered in future issues. This panel of experts is not a closed corporation. Potential contributors from other parts of the world will be heartily welcomed as well as local scholars who may have significant experiences to share in the field of horticulture. Monographic material or sundry writings of either horticultural or botanical interest to Southern California will always receive the careful consideration of editor and board; and is herewith solicited.

The various departments enjoined to serve the interests of our readers will gradually speak for themselves as they are developed into a measurable fund of knowledge and information in their respective fields.

* * *

We feel that it is fitting in this first enlarged issue of *Lasca Leaves* to present three feature articles: 1) announcement of the opening of the International Flower Show by one who can most authoritatively state its theme and purposes; 2) a brief treatise by the senior member of our Editorial Committee, Mr. William Hertrich, Curator Emeritus of the Huntington Botanical Gardens, on a subject closely in harmony with the Educational Committee's theme of the International Flower Show this year, as well as one which has made Mr. Hertrich's name known around the globe; 3) a word portrait of one of the southland's most eminent plantsmen, Mr. Hugh Evans.

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THE HOMESITE ON RANCHO SANTA ANITA

SUSANNA BRYANT DAKIN

THROUGH the centuries diverse individuals have fallen in love with the beauty and bounty of Santa Anita. First to dwell in this "Place of Many Waters," which they called *Aleupkig-na,* were Indians of Shoshonean stock who built their *jacales* (brush huts) where the homesite always has been. Here the *Gabrielinos* lived a peaceful life for an uncounted number of years—entirely off the land.

They fished in the spring-fed lake and ate a variety of small animals, birds, snakes and insects. Grasshoppers roasted on a stick they considered a delicacy. From trees and plants growing on the place came additional food, medicines, cleansers, clothing (the little that was needed in this semi-tropical land still free from missionaries' influence). Clay from local deposits was used for cooking- and storing-pots; feathers, stones and shells for utensils and ornaments.

Hugo Reid, a subsequent dweller on the Santa Anita homesite, wrote some remarkably well informed and interesting "Letters on the Indians"—first published in "The Los Angeles Star" during 1852. He, a Scot, was married to a *Gabrielino* woman of beauty and intelligence who told him legends of her people, taught him the language, and even gave him some of their more palatable recipes for publication.

After study of the Indian diet and simple remedies prescribed by the medicine men (such as wild tobacco pills to cure fever), Reid concluded that "inasmuch as syphilis was unknown, brandy and its associates unused, and high living at low ebb, their nosology was very limited." Due to diet, and possibly also to the fact that all food was eaten cold, "they carried their teeth perfect to the grave."

Through the fearless pioneering of his Franciscan friars, the King of Spain acquired title to Alta California in 1769. Santa Anita came under ecclesiastical jurisdiction as a mission *rancho* shortly after the establishment of San Gabriel Mission in 1771. Its status remained unchanged when Spanish rule in California gave way to Mexican in 1822. Administration of Santa Anita by mission *padres* continued until secularization was completed, in the late 1830's. The rancho was stocked with cattle, horses and sheep—and used purely as pasturage with no structures more permanent than the identical *jacales* of Indian herdsmen.

As a reward for the services of Reid's Indian wife, formerly housekeeper at the mission, Doña Victoria and Don Hugo were given Santa Anita by their friends the *padres* during the secularization period. In 1839, after becoming a Mexican citizen, Reid petitioned Governor Alvarado for full and clear title, but did not received more than provisional title until 1845. During that fateful year, Pio Pico made land grants hastily and indiscriminately to his friends, before fleeing the American conquerors at the end of the Mexican war. The Mexican Governor's last minute grants were disputed for many years in American courts.

Hugo Reid erected the first permanent structure on the homesite at Santa Anita. This was a one-story L-shaped *adobe* residence constructed during 1839 from the Scotchman's own plan by Indian workmen who received as pay *frijoles* three times a day and an occasional bolt of coarse cloth for clothing. The Reid family lived on the ranch, dispensing prodigious hospitality, until 1847 when hard times came upon them with the end of the war.

Santa Anita was sold in that year, for 20c an acre, to Henry Dalton an Englishman whom Reid first knew in Peru during their early coastal trading days. "*Con dolor de corazón* (with heartfelt sorrow) I do it," said Reid of the sale, "for the situation is beautiful and the ground enjoyable."

(To be continued)

Large specimen of *Aloe arborescens* in the Huntington Botanical Gardens, San Marino, California.

ALOES

WILLIAM HERTRICH

Curator Emeritus, Huntington Botanical Gardens

NOTE: The Educational Committee of the 1953 California International Flower Show is featuring South African Plants in Southern California Gardens. Aloes are distinctively native to various regions of South Africa. This paper will be followed in the early summer issue of *Lasca Leaves* by a supplementary paper "South Africa in Your Garden," by Dr. Mildred Mathias, to acquaint both student and home gardener with plants from that vast land which thrive also in our own Southland.

The Aloes belong to the Lily family (*Liliaceae*). They are indigenous mostly to South Africa. Their distribution, however, extends over many parts of Africa including Ethiopia and some of the islands adjacent to the coast of Africa. Well over a hundred and twenty-five species are known in cultivation and perhaps three or four times as many varieties.

Many Aloes from South Africa wherever else established tend to maintain their flowering season as it occurs in their native habitat, which is from October through April. This is the spring and summer season of South Africa while it is the fall and late winter season of southern California. Consequently in the southern California area these plants produce their most abundant floral beauty during months of the year when gardens tend to lack the brilliant colors they provide—chiefly bright yellows, orange, and authoritative shades of red. The candelabra form of the flowering spikes when in full bloom adds handsomely to the floral beauty of this western part of the United States. For the most part Aloes withstand the winters in this area very well. Exceptions have been recorded in 1913, 1922, 1937 and 1949,

when temperatures fell to 24° F. or lower, and when damage to flora of many kinds was due to the heavy frosts.

Aloes thrive in almost any type of soil, but like the majority of plants they respond to good culture. They prefer an open sunny exposure and do exceptionally well in the coastal belt of southern California, from Santa Barbara region southward to San Diego. Most of the species grown in southern California gardens are hardy but a few can be grown with certain success only in the warmer coastal areas or other frost-free regions. The latter minority are those which are indigenous to the warmer sections of South Africa. Aloes range in size from small species a few inches high to specimens attaining at maturity a height of thirty feet or more and tree-like proportions forming, sometimes, heavy trunks with proportionately heavy branching. The amateur horticulturist could very well assemble a collection of Aloes in southern California that would answer a variety of landscaping needs and would provide a flowering schedule from October to July, the peak of bloom coming in mid-winter. Judicious choice of the species and varieties now available in the trade would assure such a program.

The Huntington Botanical Gardens contain species and varieties of Aloes grown successfully in this region for the past forty years. Experience with them during this period indicates that it is advisable in this climate to renew or replace plants every twenty to twenty-five years, since the younger plants have noticeably more vigor and vitality, producing not only larger spikes but a greater number of them per season. Propagation methods outlined below may be followed to keep a succession of new plants ready for the replacements that need to be made.

The first Aloe plants in the Huntington Gardens were set out while the estate was undergoing landscaping plans to enhance it as a private garden for the pleasure of the Huntington family. Since that time, 1907, a steady increase in the collection has been accomplished by introduction of young plants and seed from several different parts of the world. The Mediterranean region has supplied much of the stock, from both private gardens and commercial firms; the most notable source was the famed Lord Hanbury garden, La Mortola, in Ventimiglia, Italy. The writer obtained from there some exceedingly interesting additions to the Aloe collection. Other stock came from South African Botanical Gardens after contact had been made for mutual horticultural advantage. True species are not altogether easily secured unless seed is carefully collected from isolated specimens, because Aloes have a tendency toward cross-pollinization, aided by insects. Bagging is the usual method followed to prevent this. For sheer ornamental use, however, many of the hybrid Aloes are not only acceptable but in some instances superior to true species—a fact demonstrable at the Huntington Gardens.

During the 18th century Aloes became favored plants in the Mediterranean region for various decorative uses, often in containers as well as in the open ground plantings. Ornate containers holding Aloe plants of the various sizes and types could be seen frequently on balconies or terraces in the homes and gardens of the nobility. Southern California's climate is closely similar to that of the Mediterranean and appropriate modern uses of Aloes could furnish comparably decorative effects in the gardens here where succulents can form such a natural part of the landscaping scheme.

At the turn of the present century very few Aloes had found their way into southern California. The species chiefly grown at that time was *Aloe arborescens,* one of the hardier and more ornamental species. Frequently it was found planted in the old Mission gardens, particularly in San Diego, San Juan Capistrano, and Santa Barbara, where the coastal climate favors its growth and development. *Aloe vera* is another notable species in use at that time and earlier in the history of this country, possibly, in fact, the Aloe mentioned in earliest Greek and Roman history when plants were valued for their therapeutic properties. The historic use of this species forms an interesting study. It is a smooth and grey-green leaved plant with known

medicinal qualities in the leaves, especially effective in the treatment of burns that do not respond readily to other remedies (e.g. X-ray burns). During World War II the demand for the leaves with their healing juices almost exhausted the supply of plants in the Huntington Gardens. In Puerto Rico a planting of considerable size was one time made for experimental purposes. The leaf of this Aloe when cut exudes a muscilaginous substance which causes stain to cloth fabrics that no known cleaning process will remove. Monastery gardens in continental Europe planted this species extensively for medicinal use; Mission gardens on the American continent may have followed suit, and obviously planted them for landscaping effects as well. This particular Aloe has escaped from cultivation in certain areas in Mexico and Lower California where it has tended to naturalize under favorable climatic conditions. Some years ago a number of these escapes were found in the vicinity of a number of the early established Missions. More recently several acres of the plants have been found about twenty kilometers south of the present Mission of Todos Santos in Lower California—a solid mass of them apparently washed into an Arroyo basin.

A curious fact about young Aloe plants has been noted in working with them at the Huntington Gardens—a puzzle to horticulturists because it is a fact contrary to experience with most other plants. During the severe winters of 1937 and 1949 many of the mature Aloe plants having trunks from four to six inches in diameter and four to six feet tall were affected by the frosts in direct reverse to the majority of other kinds of plants in the gardens. The older, more solid-tissued trunks suffered fatal damage from the ground upwards to about a one or two foot height while the succulent younger leaves and portions of the same plants suffered no perceptible damage whatever, either at the time or afterwards. This is one for the chemists to figure out!

Propagation of Aloes is a comparatively easy matter, either from seed, cuttings, divisions, or adventitious rootings. Seed from the majority of species is abundant and it germinates readily. Germination is accomplished most successfully in seed pans or flats. From such pans young seedlings may be transplanted after a few months to containers allowing more room for the individual seedlings to develop; and from these containers, the young plants may be placed in an open frame or ground bed with little overhead protection. After approximately two years from seeding time, depending upon the species, the plants are usually strong enough to be set out in the open ground. Some of these seedlings will begin to bloom after the third year, others take from five to six years.

A quicker method of propagation is by severing a portion of the plant including a head and planting it directly in the ground or in a container. Roots form quickly and in a fairly short time—a matter of months instead of years—new plants are ready to use for permanent location. Such plants may bloom the first year, but certainly will the second. It does not seem to matter how large the head taken for propagation use; in the experience of the Huntington Gardens, heads weighing as much as twenty to fifty pounds have been successfully rooted. Especially adapted to this method are all species and varieties of the branching types (e.g. *A. arborescens, ciliaris, plicatilis, Salm-Dyckiana, spinosissima, tenuior, striatula,* and others of similar growth habits). This method is known as vegetative propagation.

Root division is still another method. Many of the smaller species and varieties form broad clumps of numerous heads, all of which readily develop root systems which can easily be separated into potential plants of various desired sizes. Other species make underground runners in all directions and severing them at given points immeasurably simplifies the procedure of propagation, for each division quickly becomes a separate plant.

Professional growers who take advantage of the ease with which Aloes may be propagated have found that there is a market for thousands of them as seedlings, used in conjunction with other suc-

Close-up of *Aloe africana* in the Huntington Botanical Gardens. A tall-flowering species.

culents, to be sold as dish-garden plant material or other forms of house-plants. They thrive indoors in atmospheres detrimental to the health of many other types of plants; they travel well, arriving in excellent condition for such uses. Species adaptable to such treatment are *Aloe ferox, Marlothii,* and *rupestris,* all of which form striking and often bizarre little plants in their juvenile stages; the rate of growth is slow enough to be accommodating.

A great deal of variation as to size, form and color, occurs among Aloes. For the small garden, a corner might be devoted to them, apart from lawn and perennial and annual beds which require more water than Aloes need. Sometimes a narrow strip between driveway and neighboring wall will provide an ideal location out of reach of sprinkler system or other undue watering device. Such a location is further improved, as far as Aloes are concerned, by raising the level of the ground above normal thus assuring the adequate drainage they require.

The listings of Aloes below include species grown in the Huntington Gardens for many years, proving themselves suitable to a variety of garden situations. Many more might be included were it not for the fact that experience has taught us that some are too tender for general use, in the light of the fact that we occasionally have very severe winters when heavy frosts can destroy, within forty-eight hours, landscaping effects so carefully planned and created. Other species appear to prefer more humid atmosphere than southern California affords in its inland valleys. Still others so closely resemble the listed items that there would be only duplication in effect.

No elaborate botanical description accompanies this listing—only enough information to guide the average horticulturist in choosing the types of Aloes suitable to his or her garden scheme.

SMALL SPECIES

Among the *small species* I would recommend the following:

Aloe aristata—a favorite with many gardeners from the early 19th century to the present perhaps because of the parti-colored foliage, in itself a decorative feature. Flowers range in color from pale tones on the under side unexposed to the sun, to scarlet-coral on the upper, sun-bathed portions. A plant readily adaptable to container culture, similar to *A. variegata* (see below), but hardier.

A. barbertoniae—a native of Barberton in the Eastern Transvaal where summer temperatures range from a minimum of 100° F. Dense rosette of 20-30 leaves of reddish tinge over the green; toothed margins. Flower stalk to 3′ Flowers a soft red to coral, with a noticeable bloom; loosely assembled racemes.

A clariflora—formerly and until fairly recently known as *A. Schlechteri,* but now holding the name given the plant by its discoverer, Burchell, in 1811. It is a somewhat rare type of *Aloe* with definitive characteristics common to no other known species. Short decumbent stems form leaf clusters in rosette pattern. In its native stony ground in well drained positions it follows a curious habit of growth, the clumps developing in circular or semi-circular formation; if in semi-circle, the opening in the horseshoe usually faces west, according to the authoritative accounts of G. W. Reynolds in his recently published monographic material on Aloes. (See Book Review section of this issue of *Lasca Leaves*).

A. Davyana—a dwarf plant bearing flower spikes to 30″ tall; coral-colored blossoms in sun-burst effect at terminals.

A. distans—closely allied to *A. mitraeformis* described below, but smaller in all proportions except the breadth of the flowering head which tends to be broad. Somewhat straggling habit of growth; irregularly tiered foliage; flower stalk inclines toward the horizontal.

A. glauca—foliage color-tone self-described in specific name, (from *glaucous,* "with a bluish-white bloom" over pale green); pale red tubular flowers in blunt spike formation. Leaves up to 10″ in length; inflorescence to 3′ .Reddish marginal spines; and greenish flower tips; makes interesting color tone over-all.

A. grandidentata—forming dense groupings; much sucker growth. Branched inflorescence to 2′ or 3′; dull red in general tone when fully opened from yellow buds. Dull green leaves with horny and toothed margins.

A. Greenii—variegated and recurved leaves more attractive feature than the slight sparse inflorescence of faded reddish flowers. Leaves spotted white with broad transverse bands; in dense rosette pattern; each 15″ to 18″ long, with marginal tan or pinkish teeth. Natively grows best when protected from all-day sun.

A. hereroensis—curiously bunched foliage with pointed tips sharply recurving toward central flower stalk; the latter bearing 12 to 25 flowering heads; individual blossoms deep coral-red, tubular, pinched at tips just allowing yellow anthers to show; in dense umbels. Leaves spotted with "H" shaped white spots.

A. humilis—tends to grow in dense groups of plants; dense foliage clusters, rosette form, blue-green; inflorescence about 1′ tall, scarlet to orange flowers, green-tipped.

A. longistyla—compact, almost squat appearance, including short stout inflorescence; leaves dark blue-green; stalk in lavender tones; flowers salmon-pink to coral-red with bright yellow protruding stamens.

A. microstigma—irregularly spotted leaves with whitish "H" shaped markings; individually about 10″ in length; inflorescence to 30″ tall, single flowers orange-red opening from deeper red buds, with blue-grey tips.

A. mitraeformis—hardy, somewhat sprawling plant; triangular-shaped brittle leaves; branched inflorescence of deep reddish rose. Mature plants if undisturbed cover large areas of ground.

A. mudenensis—of *saponaria* group (see below). Native of Muden, Natal; branched panicles of orange-red to salmon-orange flowers, the younger ones erect, the older almost pendulous; leaves bluish to brownish-green with irregularly undulating bands of dull white to mark them.

A. Peglerae—named for one Miss Alice Pegler who discovered it in Transvaal on rocky slopes, in 1903. Compact, globular, like a loose prickly cabbage with pointed leaves incurved. Short stout columnar inflorescence, at first light brick color, the opened flowers becoming almost chartreuse, accented by purple filaments.

A. pratensis—small bushy plant; glaucous foliage; to 12″ in height. Short inflorescence, flowers a soft orange with green tips. Propagation through numerous suckers.

A. saponaria—commonly known as "Soap Aloe" from the Cape of Good Hope where natives use it for its medicinal properties (e.g. indigestion of fowls, diseases of calves, open wounds of live stock). Characterized by broad flat heads of numerous soft yellow-colored flowers. A small hardy plant to about 2′ in height in foliage which is soft tone of green, edged with brown horny teeth.

A. Schlechteri—see *A. claviflora.*

A. variegata—one of the most colorful of all the Aloes and one whose foliage is of almost equal interest to the inflorescence which is slender and about 10″ high, bearing coral to scarlet flowers in lax racemes. Leaves occur in ranks of three, gracefully clustered, individually sharp "V" shape; dark green with white oblong spots in transverse bands. Especially striking as pot plant, and does well in ground where frost is not factor to consider.

A virens—dwarf, very free-flowering—a mass of bright red flowers, individually long, tubular, occurring in heads, general effect pendulous. Apple-green leaves; prickled margins. Throws out abundance of suckers. Of doubtful species character; may be hybrid, *A. humilis* one parent, the other unknown; strong grower.

A. zebrina—of the maculate (i.e. spotted-leaved) Aloes, this species is perhaps the most widely distributed in its native South Africa, "extending from Angola on the shores of the Atlantic in the west, across tropical Africa and Portuguese East Africa to the shores of the Indian Ocean in the east," therefore considered one of the most common in that land. At one time an extensive study of the species was made at La Mortola and from that study its accepted descriptions and synonymy have been established. It is a variable species, differing greatly in color and form in different localities. Freely suckering, it forms dense groups; the foliage marked with oval whitish spots carries a purplish tone over glaucous green especially when young. Lax racemes of flowers, dull red in color, are borne on slender flowering stalks to about 4′; well branched.

MEDIUM SIZED SPECIES

A group of Aloes that can be considered for areas requiring somewhat large and spreading growth to cover the ground, are the following *medium-sized* plants:

*A. ciliaris**—a plant similar in creeping habit to *A. distans* and *A. mitraeformis* described above among the smaller-sized Aloes. *A. ciliaris,* however, is capable of easily covering even wider spaces. Thin stems about the size of a pencil tend to clamber in all directions, even over other plants when close at hand. Native records reveal that sometimes these stems

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*Climbing or clambering tendencies.

reach 20′ lengths. Leaves are comparatively small, grey-green, spreading away from stem, and recurving. Masses of bright coral red flowers on short spikes make a very ornate plant in full bloom. The species was almost eradicated from the Huntington Gardens during the winters of 1937 and 1949, due to being subject to frost damage at 20° F.—the recorded temperature where damage was first noted—this, notwithstanding overhead protection.

A. Chabaudii—forms many broad clumps, and a many-branched inflorescence of dull red blossoms individually small. Somewhat tender. Leaves an olive to glaucous green, broad at base, acutely pointed.

A. parvibracteata—one of the dwarf-sized species among the larger to medium-sized Aloes, as far as foliage is concerned which sets low to the ground; but the flower stalk with branched inflorescences of red flowers often reaches a 4′ height. A note of chemical import: the sap dries a deep purple or violet color. (See Reynolds, p. 277.)

A. petricola—a smooth-leaved species like *A. sessiliflora* described below; dull green leaves with reddish tinge in stiffly upright clusters with incurving points. Buds a deeper red than opened flowers which in turn may also be yellowish red when quite matured, the flower spike thus graduated in color tones. Plant grows to 4′ tall.

A. pretoriensis—of beautiful subdued coloring, both in foliage and in flowers. Leaves a light green covered with greyish powdery substance. Flowers a rose pink to rose red, also covered with the grey bloom. Inflorescence sometimes to 10′ in height. Leaves densely clustered and stiff, about 4 or 5 dozen to a plant.

A. sessiliflora—natively found in protected situations rather than in positions fully exposed to the sun. Spreading rosette of smooth narrow leaves to 18″, usually with generous blend of reddish tones over the dark green. Inflorescence to 30″, in slender spikes which bear yellow blossoms extremely productive of nectar.

A. striata—about 2½′ tall. Leaves 18″ long, grey-glaucous with dusty-red overtones; broadly triangular, gracefully incurved, acutely pointed. Smooth leaf surfaces; and one of the few species with entire (untoothed) margins. Inflorescence to 24″ tall; broad, flat, coral-orange flower heads, densely massed. No Aloe collection should be without hybrids of the *striata* strain—usually larger than the type and often more beautiful.

*A. striatula**—producing many canes from the root stock, each cane ½″ to 1″ thick and 5′ to 8′ long; they fall in all directions, giving the plant clumps a somewhat untidy appearance but to cover open spaces in more or less ungroomed gardens it is excellent reliable plant material; leaves fairly slender, glossy green, deeply recurved toward the ground; flowers reddish-orange in the type, yellow in the variety, *caesia*. Quickly grown from cuttings. "Creeping" type.

A. succotrina—a variable species, including a large form with single trunk, and distinct branching. Clumps sometimes cover several yards of ground if left undisturbed in their natural groupings. Dark red flowers, and in dry season, the foliage also turns red, of a deep wine tone. Sometimes confused with the Sucotra Island *Aloe, A. Perryi,* but *A. succotrina* grows wild only at the Cape.

*A. tenuior**—similar in habit to *A. striatula,* hence another of the creeping type; but somewhat less vigorous; stems more slender but up to 10′ in length, enabling the plant to give appearance of covering wide areas of ground. Blooms mid-winter; flowers, yellow. General appearance somewhat straggly but good for yellow-accented ground cover among the more numerous reds.

A. tenuior var. *rubriflora**—only slightly different botanically from the type; the flowers red, with yellow tips.

A. transvaalensis—a variable species with regard to flower-length, shape and color—the latter ranging from flesh pink to orange-red. About 10″ to 12″ in foliage height, but flowering stalks up to 3′ or 4′. Milky-green leaves with confluent white spottings.

A. Wickensii—a most acceptable species with narrow upright, leathery-surfaced leaves of a dull brownish green. Branched inflorescence to 3′ bearing red buds which open into yellow flowers, giving a bi-color appearance to the head. Seed of this species brought from South Africa by Dr. Ayres, Jr., seedlings raised in the Arboretum greenhouse, and one now established at the Huntington; although prior to this the species had been grown in the Huntington Gardens some twenty years ago.

LARGE SPECIES

Where larger Aloes can be accommodated, requiring large areas for their full development and effect, the following *large-sized bushy types* may be used:

A. arborescens—much planted in southern California. Many branches from the root stock form ultimately large shrubby specimens of these plants. A mass of single-spired inflorescence, of bright coral, provides much picturesque beauty in mid-winter. Over-all height and breadth often measures about 10′ x 10′ if undisturbed in its natural growth.

A. plicatilis—the Fan Aloe, worthy of inclusion in any garden. Of slow growth, branching near the base and re-branching repeatedly to form a shrubby specimen which in time becomes broader than tall; often reaching some eight feet in breadth. Leaves smooth and flat; 12″ long x 1″ or more broad, arranged in groups of 12 to 15 on the sides of the branches, "fanning out" to give the plant its common name. Unfortunately this species is not as hardy as some; two large specimens were fatally damaged during the severe winters of 1937 and

*Climbing or clambering tendencies.

1949. They should be planted more extensively in the coastal regions where such damage is not a hazard, for they are very decorative.

x A. Salm-Dyckiana—a natural South African hybrid—a cross between *A. arborescens* and *A. ferox*, inheriting a robust character from the latter. Stems three times the thickness of those of *A. arborescens*. Inflorescence stout, branched, often beautifully graceful in its candelabra-like form. Flowers a dark red, freely flowering in mid-winter. Perfectly hardy. Mature plants in the Huntington Gardens, 10′ to 12′ tall and 15′ across.

A. spinosissima—a noble plant, one of the best hybrids. Freely branching to form large attractive shrubby specimen. Free-flowering, as well, and hardy.

TALL SPECIES

For background plants a number of *tall, single stemmed species* may be recommended; they are plentiful in number to choose from; the dramatic effects produced make them highly desirable for such purposes:

(Note: the arrangement here is according to size, from the smaller to the larger, rather than alphabetically.)

A. lineata—up to 7′ or 8′ in plant size, but crowned with group inflorescences which give an added height of two or three feet more when in bloom. "Poker" type flowering spikes are more sparse than those of *A. africana* which this species resembles. Closely related also to *A. glauca*, but having bright green foliage in contrast, and lineate leaves. Salmon pink flowers. Red spines on leaf margins.

A. speciosa—beautiful stiffly curving mass of blue-green pointed leaves in large rosette pattern, often with reddish tinge, an echo of the flower color at the tip of the spike: buds red, opened lower flowers are green. Flower-spike measurement 18″, dense and bluntly conical.

A. africana—up to 10′ tall or more; a stately plant especially when in flower. Blossoms coral-red to orange. Hardy. Historically interesting: grown in Dutch East India Company's garden in 1695. Very distinctive plant with its narrow, fleshy, recurved, and sharply pointed foliage.

A. pluridens—nearest ally is *A. arborescens* from which it differs in having narrower yellow-green leaves with crowded pink or white marginal teeth. One of the single-stemmed types that tends to branch; over-all height often up to 12′. Flower spikes narrow; scarlet tubular flowers. Recurved foliage gives fountain-effect from which flower stalks emerge.

A. Thraskii—tall pyramidal appearance given by persistence of leaves which fall against the tall single stem and form "beard." Upper, incurved leaves stiffly graceful to support the 10 or 12 flowering spikes on short stems; blossoms, coral color. Natively grows in almost pure sand, never more than few hundred yards from the sea, in Natal. Highly productive of nectar.

A. rupestris—a remarkably slender type of single-stemmed *Aloe*, with branched inflorescence to 24″ in height. Spikes in bicolored effect due to unopened buds toward tip being orange-yellow, opening flowers light lemon yellow, and exerted stamens protruding an accent of vermillion. Foliage usually a dull dark green.

A. ferox—single simple stem, or trunk, heavily bearded with old leaves two-thirds the way up; living foliage a dull green, sharply pointed to reddish tips; inflorescence of six to 10 flower spikes, candelabra-formation, of bright glowing coral-orange. Trunk up to 15′ in height, 4″ to 5″ thick. Freely used in Mediterranean region for decorative potted or tubbed plants.

A. candelabrum—similar to *A. ferox*, but stouter trunk, even more heavily bearded with old leaves. Foliage less armed and some completely smooth.

A. Marlothii—closely allied to *A. ferox*. but heavier trunk, larger leaves which spread horizontally to support the horizontal stretch of the flowering stalks. Flower spikes curve gracefully to vertical tips. Over-all height up to 12′ or 16′, with trunk diameter to 6″. Densely armed foliage. Flowers dusky yellow.

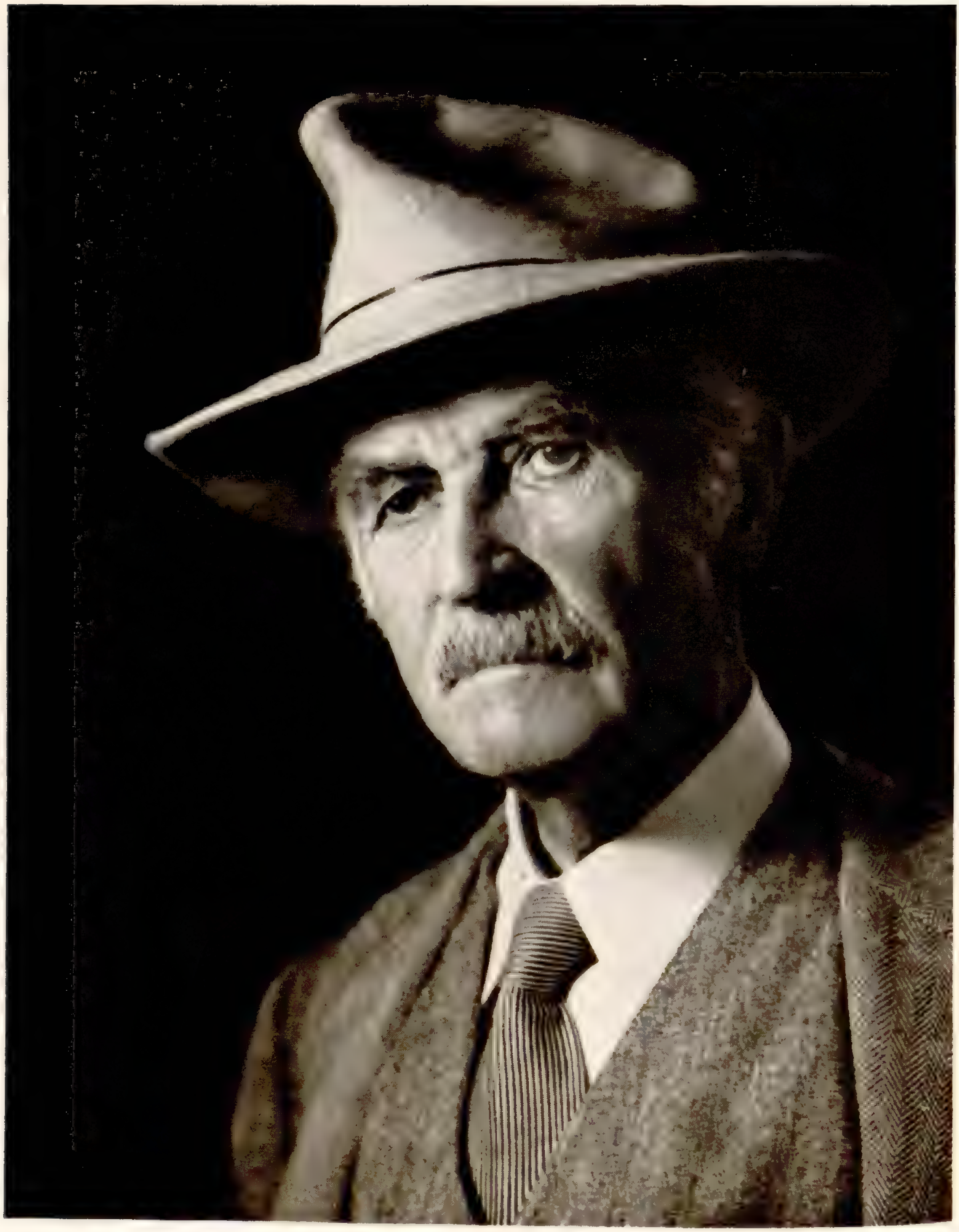
A. dichotoma—in its native Cape Province, grows up to 30′ with proportionate branching. Slow-growing in southern California, but surprisingly hardy considering the section of Africa to which it is native. The Huntington specimen is about 12′ tall at present writing, with clean light grey trunk about 10″ in diameter. Lemon-yellow inflorescence.

LARGEST SPECIES

The *largest* of all known Aloes stands alone:

A. Bainesii—sometimes referred to as "the gigantic Aloe." Fifty-foot specimens not uncommon in its native far-east and west South African habitats. Dense cyclindrical-shaped racemes of flowers of coral-pink. Deeply channelled leaves, dull green. Has proved somewhat tender at Huntington Gardens, several specimens lost in 1937 and 1949 during freezes. Should prove suitable, however, for coastal plantings, and should be used more extensively for bold beauty.

NOTE: *The Aloes of South Africa* by Gilbert Westacott Reynolds, published in late 1950, is the source of final reference for nomenclature, habitat, and historical notes used in this article, since the writer feels that this is the best comprehensive work available to date on this subject. Numerous illustrations in color, as well as in half tones, make this a most commendable work to recommend to the reader, gardener, or horticulturist who wishes to pursue the subject further. Excellent references within the book itself lead to the best textual and illustrative material available.



MR. HUGH EVANS

1952

(A photograph of later date than the one which appeared with the original article.)

HUGH EVANS: PLANTSMAN

CORA R. BRANDT

NOTE: Reprint of article in the *Journal of the California Horticultural Society*, xii. No. 4. October, 1951; with slight changes at the suggestion of Mr. Morgan Evans, and with the knowledge and consent of Miss Brandt, to bring it up to date.

"Dad has been the delight and pride of his large family for his literary talents as well as for his horticultural gifts, and we feel singularly blessed in having a father who has the happy combination of wit and great kindness, a learned mind and an understanding heart."

These words quoted from a recent letter from Dorothy Evans McKee, one of his daughters, evoke immediately the personality of Hugh Evans, and in the minds of those who have known him, there forms the welcome image of the tall, spare man in the old broadbrimmed hat, but with remarkable endurance, who is one of the most beloved and highly respected of our plantsmen. All the horticultural world knows him as the introducer of more, and more interesting, plant material than any other single individual in recent years and no one who speaks with him can fail to notice his scholarly qualities or the kindly humor of which his daughter makes mention. But most of us who live at a distance are not too well acquainted with the man who is the idol of his family and who, in turn, draws his greatest delight from the richness of that intimate relationship—this man who is no less a part of Hugh Evans than the eminent horticulturist.

On the other hand there was in his children, during their earlier years, no awareness of the keen interest in plants that lay hidden under the surface activities of his life although they were always conscious of being surrounded by beauty in the gardens of their various homes. But it was only in the early 1920's, with the development of the three-acre garden at the 24th Street house in Santa Monica that he began to realize the garden of his dreams and drew visitors from far and wide who came to see the novelties which he had brought from all parts of the world to enrich the gardens of California, proving their merit by his own use of them. Until this time there had been neither time nor money to pursue this more-than-hobby. Making a living and raising five children had absorbed so much of his energies that his native inherited interest and delight in exotic plant material had to lie fallow.

Hugh Evans was born in England on February 14, 1874, on a beautiful estate in the City of Stamford on the River Welland, a few miles east of Leicester and south of Lincoln, at the point where the counties of Northampton and Lincolnshire meet. His father, a solicitor by profession, was also a keen horticulturist; the mother shared this interest as well as the literary inclinations which distinguished the family. The garden was extensive and boasted several greenhouses which made their contributions to both house and grounds. These surroundings, together with the frequent visits with the parents to Kew Gardens and to surrounding estates, helped to instill into the children that love of growing beauty which resulted in all of them creating gardens of their own in the various parts of the world to which they eventually scattered. Mrs. McKee writes again, "My sister and I stayed with some of his sisters and a brother in Italy and in England—and to our surprise and interest, we realized that Dad and his brothers and sisters scattered to the far corners of the world were all carrying on the Evans heritage—a passionate love of nature and gardens, combined with scholarly minds and delightful personalities."

Being a "middle son" of those nine children meant that professional opportunities were considerably restricted for Hugh Evans since the elder sons succeeded naturally to the law practice and to such other advantages as were offered at home. However, like his brothers, he was a Marlborough boy and might, like them, have gone on to Oxford, but his interests and desires ran in the direction of farming, so he was sent instead to an agricultural school. In the year 1892, being then all of eighteen years of age and wishing to make practical use of the knowledge gained in school, he came to California where friends of the family had settled earlier. In spite of the unusually close attachment between himself and his family, kept alive always by constant correspondence, he never saw them again. His mother and father died in their early sixties and perhaps he, consciously or unconsciously, was avoiding the emotional strain of a return to the home lacking their presence. Being youthfully proud of his skilled horsemanship, he started his career in the far away land by breaking horses for the older and presumably more experienced settlers. This brief period was followed by a discouraging ten years trying to grow lemons near San Diego—a heart-breaking venture in a country that was still wild and primitive. It was necessary to constantly fight the wild rabbits that infested it and even more, the continual droughts, against which there was then no means of protection as now by artificial irrigation. Both garden and lemon groves suffered and, finding that, in addition to all the other difficulties, there was no market for the fruits of such prodigious labor, he finally gave up the struggle and left San Diego for Boyle Heights, Los Angeles, where he remained for two years. In 1903 he started a nursery business at 440 South Broadway and at Sycamore Grove. It proved, however, to be but an abortive attempt to make a living in the line he loved, since it did not produce enough to support a growing family.

For, in the meantime, Hugh Evans had met and married Muriel Morgan, whose father, also an Englishman of the aristocratic tradition, had settled here with his family of four children. After the not too successful venture, which terminated with the sale of the business to the well-known Theodore Payne, Mr. Evans moved to Santa Monica, where the Morgan family were already established and which he felt would be a good place to raise his children. He found employment first with the Pacific Mutual Life Insurance Company, but in spite of the fact that his native shrewdness afforded him considerable success, he left this position to engage in land appraisal, which led him in time to become active in the real estate business, to which he seemed excellently suited. The success in this field, culminating with the prosperous years of 1925 and 1926, gave him his first chance to indulge his passion for nature in all its forms and especially for the use of exotic plant material (which he began to import about 1923) in his garden. At about this period he became intensely interested in the flora of the Hawaiian Islands and Tahiti and then and later spent much time there studying the plant life and arranging for importations to add to the many he had already secured from other parts, especially Australia and South Africa. The home grounds at 501 - 24th Street in Santa Monica drew discriminating visitors in great numbers and their desire to secure for themselves the interesting material which they saw so skillfully grown and displayed soon had Mr. Evans carrying on a nursery business in his home as a side-line. At the same time the gardens became a center of botanical and horticultural interest for students all over the country.

With the turn of times that brought the "big crash" of the thirties and its consequent worries, the real estate business was completely supplanted by the nursery activities, an unusually fortunate outcome of the difficulties of the time for both Mr. Evans and the horticultural public.

In 1936 the firm of Evans & Reeves was established as a nursery business at 255 South Barrington Avenue, West Los Angeles, and specialized in the introduction and development of new and unusual semi-tropical plants suitable for California gardens.* Most of these were grown from seed, especially in the early days, and to Mr. Evans' great regret, not all have survived the various moves from the garden in which they first flowered in California. Some, of course, were abandoned as unsuitable to our conditions. The following list of plants introduced both before and after the establishment of the nursery, was obtained from Mr. Evans and his son Jack, and gives some idea of the extent to which we are all indebted to Hugh Evans — a list characterized by him as "partial" and on which he modestly comments, " . . . it is always a little difficult to say positively that such a man introduced so and so. It may have been introduced and got lost in cultivation and then was introduced again. That has happened a good many times."

1924 Introductions: Aster fruticosus, Baeckia virgata, Bowkeria Gerrardiana, Chamaelaucium ciliatum, Drimys Winteri (this introduction from England is considered by Mr. Evans to be one of his best).

1925 Introductions: Abelia Schumannii, Chironia baccifera, C. ixifera, Correa pulchella, C. speciosa, C. ventricosa, Dryandra formosana, the following species of Eucalyptus: angulosa, caesia, constricta, crucis, desmondensis, eremophila, erythrocorys, Forrestiana, grossa, macranda, macrocarpa, nutans, Oldfieldii, Preissiana, pyriformis, sepulcralis, spathulata, Steedmanii, Stricklandii, tetraptera, torquata; Grevillea leucopteris, G. obtusifolia, G. ornithopoda, G. paniculata, G. rosmariniformis, G. Wilsonii, Ochna multiflora, Strophanthus speciosus.

1926 Introductions: Aristea Ecklonii, Athanasia parviflora, Barosma scoparia, Cassia splendida, Ceratostigma Willmottianum, Coleonema pulchrum, Crotalaria capensis, Daviesia latifolia, Gossypium Sturtii, Jacquemontia caerulea, Oxylobium (several species), Tibouchina laxa, Westringia rosmariniformis.

1927 Introductions: Bauhinia corymbosa, Clerodendrum myricoides, Hibbertia volubilis, Odontosperum sericeum, Oxylobium lanceolatum, Pentas carnea, Tibouchina splendens grandiflora.

1929 Introductions: Dimorphotheca spectabilis, Pentas longiflora, Senecio confusus, Sutera grandiflora.

1930 Introductions: Bougainvillea praetoriensis, Fuchsia alpestris.

1931 Introductions: Brachylaena elliptica, Thenardia floribunda.

1932 Introduction: Bougainvillea Afterglow.

1936 Introductions: Jacquemontia pentantha, Bougainvillea Barbara Karst.

Other introductions up to 1939: Chamaelaucium gracile, C. rubrum, C. uncinatum, Euryops Athanasiae, E. pectinatus, E. spathaceus.

1940 Introduction: Bougainvillea Panama Queen.

Most of the eucalyptus varieties and the chamaelauciums were introduced from West Australia in collaboration with E. O. Orpet of Santa Barbara.

Hibiscus in variety were imported from Hawaii, Bermuda, Trinidad and other countries from 1923 until 1939 or later. *Securidaca diversifolia* was brought from Guatemala and *Ipomoea aurea* var. *superba* from East Africa. Since 1936 several other ornamentals have been imported including *Calliandra inaequilatera.*

*Mr. Morgan Evans recently has added a note to this paragraph to the effect that the firm came into being through the association of Mr. Evans with Jack Reeves, himself a son of an old horticultural family. John Reeves, Sr., in fact, deserves a good deal of credit for the original planting of the City of Beverly Hills.

Dais cotinifolia, Erythrina indica, Erythrina (several undetermined species), *E. speciosa, Brunfelsia nitida, Bauhinia Hookeri, Vitis Voinierana, V. vomerensis, Trichosporum grandiflorum,* and *Talauma Hodgsonii, Cienfugosia hakeifolia* was brought in prior to its distribution by the Bureau of Plant Introduction of the U.S.D.A. *Bougainvillea* Orange King was imported as late as 1945 and several others are now on hand, although not as yet on the market.*

It is rather startling to realize that we owe so many things that are today a taken-for-granted part of our landscape to the comparatively recent enterprise of this one man,—shrubs like the pleromas, the chamaelauciums and the great number of dwarf eucalyptus varieties.

These plants with others were all thoroughly tested and only the worthier were introduced. Purchasers were always given full instructions as to where the given plant should or should not be placed and information as to cultural requirements was furnished them. The catalogues issued by the firm were, of course, of unusual interest, listing as they did these newer items with bits of their history as well as directions for their care. The earlier issues were all the more intriguing for being liberally sprinkled with literary allusions and quotations from Mr. Evans' favorite poets.

During all this time the Evans home had become a center of hospitality, almost as well-known for that as for the horticultural preeminence of its gardens. Mrs. Evans, a simple, friendly, self-effacing homemaker but withal witty and with the ability to add much-to-the-point comments to the lively conversations that went on, kept her house open to all young people, especially to the friends of her children. The Sunday night suppers were and are an institution and to have any or all of his children present around the table is still one of Hugh Evans' greatest delights. His pleasure in having the younger generation close to him actually and spiritually seems a welcome compensation for the early separation from his dearly beloved family in England. The children and their friends are no less pleased to be present, for father is a genial host and an excellent *raconteur* and the talk ranges over centuries of history and literature as well as present politics in addition to the horticultural subjects in which the children are all interested, each in his own way. In spite of the ups and downs of his fortunes, Mr. Evans had been able to give them the advantages he so much desired for them. Each of them has spent some time abroad,—Jack in Europe, Bernard in the West Indies, and Morgan, accompanying his father, in the Pacific Islands.* The two daughters had been sent to visit the family in the Old World with the idea that they, too, should become acquainted with other customs and cultures. Mr. Evans took great satisfaction in thus seeing that another link was established with the home of his youth and in the continuance of tradition.

The nursery business has grown over the years and includes now a very profitable landscaping department presided over by son Jack, who is also well-known throughout the country for his successful breeding of fuchsias, pelargoniums and hibiscus. A late addition to the Evans collections are the orchids which have become such a prominent feature at the nursery. Lathhouse after lathhouse of cymbidiums give evidence of this interest and of Mr. Evans' industry in securing proper identification of the different varieties.

The business, from which Mr. Reeves has recently separated himself, is now under the management of the two sons and a new member of the firm, Mr. Gunter Herman. In this arrangement, Jack's share of the activities has already been described, and Bernard, who, following his father, is in the real estate and appraisal field and has a mind and liking for business, is active in the directorate of the company into which the nursery is now incorporated. His level-headed judgment is invaluable to the organization. Morgan, or Bill as he is familiarly called, has taken over the very large foreign correspondence and concerns himself mostly with the program of plant introduction initiated by his father whom, in some ways, he resembles.

The boys are all very close friends as well as brothers, but are alike mostly in their directions rather than in their qualities. They all have fine gardens of their own in Will Rogers Canyon in Los Angeles. Jack's garden features mainly azaleas and camellias, and Morgan's the tropicals even more than the sub-tropicals. Bernard's interest lies mainly in the beauty he can create with any of these materials. Of the two daughters, Dorothy, the elder, exercises her green thumb in Walnut Creek where she, too, is happily raising a family; and the younger, Marjorie, gardens like her brothers in Will Rogers Canyon.

Mr. Evans is much sought after as a contributor by local papers and magazines in which his articles preach always the use of interesting shrubs and trees for civic betterment as well as for gardens and stress constantly the power of beauty.

The esteem in which he is held is shown by the many horticultural varieties of plants named for him. There has long been a *Fuchsia* Hugh Evans (a Hazard introduction); there is also a *Camellia Sasanqua* Hugh Evans, and lately a *Cymbidium* likewise bearing his name. The red-

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*As of present date (Spring, 1953), *Bougainvillea* Texas Dawn, Rose Queen, and Temple Fire may be added; the latter to be released in April,—a true bush form with rosy red bracts in profusion several times a year.

*Since the writing of this article, Mr. Morgan Evans tells us he has also "made a loop all the way around the world."

flowered *Eucalyptus macrocarpa* is always associated with him; it is one of his proudest introductions and all the more valuable in that it is now almost extinct in West Australia whence it came. Last year Mr. Evans was awarded the Silver Cup of The California Association of Nurserymen for the introduction of plants into the State and recently he was elected an Honorary Member of the San Diego Floral Association. The California Horticultural Society is proud of the fact that he has been a corresponding member of that organization since its inception.

It is a rare pleasure to meet and talk with this sage of seventy-seven years, still actively interested in what goes on in the nursery and in new methods of propagation, still regretting, in looking over foreign catalogues that "many of those beautiful and interesting plants have passed from my ken," modestly proud of his record in the plant world and of the achievements of his children, gently scornful of the not-too-adventurous gardener, and always generous with kindly advice and good stories.

The making of gardens is for him still the finest of pursuits. He himself quotes as an indication of his own attitude the following lines of Francis Bacon:

> "God Almighty first planted a garden, and indeed it is the purest of human pleasures; it is the greatest refreshment to the spirit of men; without which, buildings and palaces are but gross handy-works; and man shall ever see that, when ages grow to civility and elegance, man comes to build stately, sooner than to garden finely; as if gardening were the greater perfection."

CALENDAR

Southern California Horticultural Institute: meets the third Thursday of each month, at the Recreation Building at 18th and Toberman, Los Angeles. Plant display, 7:30 p.m.; meeting call to order, 8 p.m.

* * *

Southern California Camellia Society: meets the second Thursday of each month, November—April, inclusive; at Jefferson School Auditorium, corner of North Sierra Bonita Avenue and Villa St., Pasadena. Camellia display, 7:30 p.m.; meeting call to order, 8 p.m.

* * *

International Flower Show. Inglewood. March 14th through the 22nd.

* * *

Southern California Spring Flower and Garden Show. April 14th through the 19th. At Fannie E. Morrison Horticultural Center, Brookside Park, Pasadena. Theme: "As You Like It."

* * *

Orchid Hobbyists. San Gabriel Valley: the 3rd Thursday, at Michillinda Women's Club, 736 South Rosemead Blvd., Pasadena. 8 p.m.

* * *

Annual Meeting of the Western Chapter of the *National Shade Tree Conference* will be held this year at the Miramar Hotel, Santa Monica, California, May 13-16, inclusive. Of particular interest to those who are concerned with tree care and management.

* * *

Bulb Society: second Wednesday of the month at Pasadena Women's Clubhouse, 58 South Sierra Madre Ave., Pasadena. At 8 p.m.

* * *

American Begonia Society. San Gabriel Branch: at Masonic Temple, 506 South Santa Anita, Arcadia. The 4th Wednesday. 8 p.m.

Pacific Rose Society: first Thursday of each month, at Odd Fellows Hall, 175 North Los Robles Ave., Pasadena. 8 p.m. (Picnic meetings planned from May to October at various locations, by announcement.)

* * *

Turf Experimental Research, Advisory Committee: *March* meeting on the 16th at Eaton's, Santa Anita Restaurant. Dinner meeting, 6 p.m. sponsored by the Arboretum. Reservations should be made with Fred W. Roewekamp, Room 223, Los Angeles City Hall.
April: tentative sponsorship by Southern California Golf Association. *May:* under sponsorship of California Association of Nurserymen. *June:* under auspices of California Fertilizer Association. These meetings are of special interest to those interested in, and concerned with turf culture.

* * *

Southern California Botanists: announcement of meetings. March 28: Rancho Santa Ana Botanic Garden, 1500 N. College Ave., Claremont. May 2-3: Spring Field Trip to Santa Catalina Island; overnight at the Pasadena YMCA Camp Orizaba, expenses about $10 including 5 or 6 meals and round-trip transportation from Wilmington.

* * *

The Calendar column is designed to keep you posted on regular meeting dates of horticultural and plant societies in the Los Angeles area. Societies that care to make use of this column are asked to send their data to the editor of *Lasca Leaves* (Box 688, Arcadia, Calif.) not later than the first of December, March, June, and September to meet the quarterly press date. Kindly include the name of the person to whom correspondence may be directed, as well as the society name, meeting dates, and place of meeting.

Acacia Steedmani in bloom at the Arboretum.

GROWING NOTES

GEORGE H. SPALDING

Acacia Steedmani

The Steedman Acacia, at least in its younger stages, is one of the loveliest species this writer has observed. The plants in the Arboretum collection are only two years old and at this writing (January, 1953) are in full bloom. The new growth has a purplish cast during the cooler months, which is one of this plant's good features. This purple coloring seems to become less noticeable with age. The stems have a pink color that adds considerable interest to the plant. The flowers are one-half inch balls of pure golden yellow and practically smother the plant. It is a shrubby Acacia with a rounded form.

Seed planted in December, 1950, germinated in nine days with no special treatment. The plants were set in the field in April, 1951. According to information in Australian nursery catalogs this species is only supposed to reach, in height, a maximum of three feet. Two of the three plants in our collection, have made double this growth. One plant has only reached three feet. This is not unusual as many plants when grown out of their native habitat often

act completely different. They are now six feet tall with a spread of four to five feet.

A word of caution should be recorded here by reminding our readers that many plants are most attractive when young, but require judicious pruning when older to keep them attractive.

Solanum macranthum

If you are looking for a quick growing, large, rangy, plant to give a tropical effect, try *Solanum macranthum.* It is larged leaved, somewhat spiny, and rather succulent in appearance. The leaves resemble those of the pin oak in shape but are four to five times as large. Mature leaves often measure twelve inches long by seven inches wide. The large, one to two inch flowers are a good lavender color with a bright bundle of yellow stamens forming a column in the center. They are borne in axillary clusters of ten to fifteen.

Solanum macranthum is not winter hardy at the Arboretum, but this is a minor factor as young plants six inches tall received in December 1950, transferred into gallon cans on receipt and planted out in permanent positions in April reached a height of over eight feet with a spread of six feet before they were killed by frost. It bloomed sparsely but the size and beauty of the flowers made up for their scarcity.

Many people will say, "We can't be bothered with such temporary plants." They won't be interested in this item. For those who are striving for a tropical effect it is very worthwhile.

THE SONG OF THE EXHIBITOR

S. Reynolds Hole

"Oh, give me air, and syringe me with waters of Cologne!
Dry as a *Hortus siccus,* run to seed, and overblown,
I try to keep my head up, but down it goes again,
Just like those drooping, stooping flowers, well named the 'sickly men.'
I'm a poor, used-up exhibitor,
Knocked out of present time.

"I've been to all the flower shows, north, south, and east, and west,
By rails and road, with huge van loads of plants I love the best;—
From dusk to dawn, through night to morn, I've dozed 'mid clank and din,
And woke, with cramp in both my legs, and bristles on my chin.
I'm a poor, used-up exhibitor,
Knocked out of present time.

"Oh, my orchids look most awk'wardly—stove plants are stoved-in quite—
Like my Melon, cut up by the judge, a melancholy sight!
They've broke my *Cissus* all to bits, as though I had a pair;
And they've brushed in all directions my pretty Maiden's Hair.
I'm a poor, used-up exhibitor,
Knocked out of present time.

"Look at *Erica depressa*—depressa, yes, indeed,
As though an alderman sat there, after a heavy feed;
And as for poor *Propendens*—'tis enough to make one say
Bad words 'upon this blasted heath,' like Macbeth in the play.
I'm a poor, used-up exhibitor,
Knocked out of present time.

"There's my *Lillium auratum,* shrivelled up, and torn, and tanned,—
They may well call it 'Japonicum,' for it looks as though japanned;
And they've stole my pet new *Tricolor,* with gold and crimson ribbed;
I meant it for a 'bedder,' but I didn't want it *cribbed.*
I'm a poor, used-up exhibitor,
Knocked out of present time.

"Here comes my wife! Now, on my life, of Hebes she be queen;
My big prize cup she's filling up with 'Bass' of golden sheen—
Delicious! I'm myself once more; and all I want to know,
Is where and when we show again ?—hurrah for that next show!
I'm a fine, revived exhibitor,
Quite up to present times."

Note: Just before the turn of the present century, the Dean of Rochester (S. Reynolds Hole), in England was constrained to include the above in his collection of articles for the *London Guardian.* It was ultimately printed in book form, titled "A Book About the Garden and the Gardener," as pleasant a bit of enchantment as one could find in any age or era.

NAMES, NOTES AND NEWS

Lasca Visitor:

Dr. A. Y. Goor, Head of Forestry in Palestine, was a recent visitor at the Arboretum. Dr. Goor had spent a year in Australia devoting time to the study of the Eucalypts in relation to their use in the reforestation program of Israel. Dr. Goor's interest in Southern California area centered around the *Eucalyptus* species grown here. The Arboretum's young collection of some 175 species of *Eucalyptus* served an international purpose, as Dr. Goor was accompanied by Gustav Jurens of the U. S. Forestry Service with whom he conferred. Arrangements were made whereby authentic seeds and cuttings from Israel, of plants mentioned in the Bible, would be incorporated in the planting scheme of the Arboretum, a welcome and added offering, from Dr. Goor.

* * *

Will the desert bloom?

According to Dr. Frits Went's studies, and research work on southern California desert flora with relation to climatic factors, the rains of this season have been plentiful enough to assure an excellent wild flower display this spring on the desert. An exception, however, is the Death Valley region where insufficient rains have fallen.

* * *

Dew Research Station, Karkur, Israel.

Mr. S. Duvdevani, Director of the Dew Research Station in Karkur, Israel, has arrived in Southern California, invited by Dr. Frits Went to the Earhart Laboratory for a period of one year to study the effects of dew on plants under controlled laboratory conditions. Dew precipitation and its effect on plants is an entirely new field of research—one which should result significantly in the fundamental understanding of plant growth in arid and semi-arid regions of the world.

Mr. Duvdevani has invented the first practical gauge for the recording of dew precipitation, and recently has supervised the installation of the first Dew Recording Station in the United States, at the Los Angeles State and County Arboretum. Another station is under process of being installed at Kenneth Fobes' Palm Wells in Morango Valley; a third will be installed at California Institute of Technology.

* * *

Krillium Experimentation

Since last March (1952) the Arboretum has had a contract with Monsanto Chemical Company to field-test Krillium soil conditioners on the home gardener level. These tests have been conducted by Mr. Louis B. Martin, the Arboretum's Research Assistant, with lawn grasses, flowers, and vegetables. The next issue of *Lasca Leaves* will carry an article by Mr. Martin covering certain phases of this Krillium soil conditioner testing program. We are indebted to the following companies for furnishing seeds used in this testing program: Aggeler and Musser, Bodger Seed Co., Ferry, Morse Seed Co., Germain's, Hagen's Nursery, Northrup-King.

* * *

Dr. Frits Went, as our local readers know, is in charge of Earhart Plant Research Laboratory, of the California Institute of Technology, Pasadena. From time to time he will give us reports of particular interest, such as the following notes on his trip to Europe last year:

"Last year I made several trips to Europe and the Near East for botanical and horticultural observations. In September in London, I attended the Thirteenth International Horticultural Congress, sponsored by the Royal Horticultural Society. It was interesting to note what a large proportion of the papers presented at this congress were of botanical or plant physiological nature, showing what close connections are developing between the pure and applied sciences, particularly botany and horticulture. Unfortunately the congress was attended by only a few growers and practical people. I imagine that this would have been very different here in America where public interest in scientific matters is very great.

"The pageantry of official English life was very interesting and enjoyable to see. For instance, I attended the official congress dinner and a reception given by the Corporation of London where the Lord Mayor in full regalia received the congressionalists. It also was interesting to note how the interest for the climatic response of plants is increasing by leaps and bounds. Knowledge about those responses is just what the Arboretum is trying to obtain for exotics in Southern California. There is probably no other area in the world with such diversified climatic conditions as California, and therefore we can feel proud that California takes such active part in the development of knowledge about the climatic responses of plants.

"Although I feel that in Europe botanical activities have been increasing at a very great rate, yet most botanists over there have the impression that they could not keep up with the rate of botanical development in America. Most botanists are of the impression that money is unlimited in the United States. Most of them were surprised when I claimed that there still is more botanical and horticultural activity in Europe than in America. Since, however, botany and horticulture have started to develop so recently in the United States, the rate of growth here greatly exceeds that in Europe, but we have not caught up as yet. It is through activities like the Los Angeles State and County Arboretum that we will have to catch up with the botanical and horticultural work in Europe.

"With the help of the Arboretum, I was able to introduce a very large number of seeds, largely of annual plants, from Israel and Spain. Last winter had been very wet in both places and therefore the display of spring flowers had been exceptional. I made use of this opportunity in collecting as many seeds as possible. They will be tested in the Earhart Laboratory."

BOOK REVIEWS and COMMENTS

The Aloes of South Africa—by Gilbert Westacott Reynolds. 520 pp. Illus. Index. Dec., 1950. Publ. by Trustees, The Aloes of South Africa Book Fund. Distributed in U. S. A. by Abbey Garden Press, 132 W. Union St., Pasadena. $11.85.

An amply illustrated work, both in color and half-tones; can well be considered the best "all about Aloes" treatise in our present time. Predominantly a taxonomic treatment recognizing the question of variation and natural hybrids under the species.

• • •

Growing Cymbidium Orchids and Other Flowers—Louis M. Boyle. Times Mirror-Press, Los Angeles, Calif. 1953. $12.00.

As a contribution to the lore of Los Angeles in the days when industrial activity was just gaining momentum, Louis Boyle's most recent book fills a niche of its own. The title does not convey, however, the story he has woven into its more than 500 pages. Family and friends play a large part in the picture of his boyhood days and the advent into a business life, as he tells in a friendly manner of the early development of Los Angeles and Southern California as he saw it.

Relating the development of his El Rancho Rinconada in Ojai Valley where he has planted Cymbidium orchids by the thousands, he has used more than 700 photographs, in a manner that can only be described as lavish, to bring to the reader his dream of this ranch and the Cymbidium flowers he loves so well. Mr. Boyle's book will have the greatest appeal for his many friends whose names and pictures are included, and those who appreciate the early charm of this community, as well as Cymbidium enthusiasts who never tire of talking about their favorite flower and seeing photographs of well-grown specimens.

Two valuable records are incorporated: Dr. Gustav A. L. Mehlquist's paper on *Chromosome Numbers in the Genus Cymbidium*, originally published in *Cymbidium Society News*, and the *Complete List of Cymbidium Hybrids*, as registered in England through the year 1949.

ROBERT CASAMAJOR

• • •

Plants, Man, and Life—Edgar A. Anderson. Little, Brown and Co., Boston. 1952. 245 pp. Illus. (16 drawings) and indexed. $4.00.

Edgar Anderson has opened up paths of botanical study which have been far too little travelled. His lively enthusiasm has infused technical information to a point where there is arresting interest for botanist and layman alike. Although his paths begin with the weeds at our door-yard, they take us into strange and foreign places.

Our commonest plants, we are told, are the least known—their background being so tangled and complex because of their long association with man's uses of them, that many botanists have given up any attempt to name them precisely. In Dr. Anderson's judgment, the accurate classification of these is of more importance than that of all the other plants in the world, because they concern not only agriculturists and plant-breeders but also anthropologists and historians.

Man, he points out, unconciously as well as deliberately, carries whole floras about the globe with him, so that we actually live in a transported landscape. In his discussion of man and this "transported landscape," he used the familiar California countryside as an example. Here, as we know, wild oats, fennel, mustard, wild radish, wild carrot, and countless other weeds and grasses are obliterating the native flora. These strangers came in with the Spaniards, the Forty-niners; with live-stock, and in ships' ballast—weeds that were old when Troy was young. And so "the history of weeds is the history of man," and his migrations.

By such techniques as the microscopic study of pollen grains from buried and prehistoric sites, the study of root tips, the measurements of leaves and the study of crop variations much work is being done to discover the relationship between our cultivated crops, wheat, cotton, maize, and the avocado for example, and their wild progenitors. For the advancement of understanding this particular problem, Dr. Anderson urges the active co-operation of historians, anthropologists and ethno-botanists. In his chapter, "A Roster of Our Most Important Crop Plants and their Probable Origin," he gives a general review, he tells us, of what is or is not known about the origin of our cultivated plants.

Glimpses into western Mexico and Guatemala reveal that these primitive peoples long ago were not careless plant-breeders but took care to preserve the purity of their crops. And from an apparently tangled and planless garden in the village of Santa Lucia, Dr. Anderson found biological plant order, learning some basic principles of horticulture which he says he has tried out with considerable success at his home in Missouri. Today in a fertile valley of Honduras, through the cooperation of the United Fruit Company, the Escuela Agricola, and a Guggenheim grant, he has established an experimental plot in which he and others may introduce, grow and intensively study and observe certain plants, recording them in detail by means of photographic prints on herbarium sheets—an ingenious method devised by Dr. Anderson which he calls "an inclusive herbaria."

MIRA C. SAUNDERS

• • •

In Gardens of Hawaii—Marie C. Neal. Bishop Museum. Honolulu, 1948. Illus. $8.50.

The southland's garden-loving visitor to Hawaii will find this book of value largely because it carefully translates the unfamiliar native Hawaiian names of their plants and flowers into scientific plant names.

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JANET WRIGHT, *Editor*

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An example of a Krilium test site, in which a number of Krilium formulations were incorporated at different soil levels. The white areas resulted from surface applications of Krilium.

SOIL CONDITIONING WITH KRILIUM

LOUIS B. MARTIN

"Lay me in the earth, and make it
Soft and loose and light above me."

SONG OF HIAWATHA

THE practice is old. The gardener has used compost, steer manure, and straw. So, also, has the farmer. Yes, conditioning the soil,—i.e. improving the physical structure —has always been of interest to those engaged in growing plants.

The approach is new. Through the use of chemicals synthesized especially for conditioning the soil, it is hoped that the gardener and farmer can achieve improvement of the soil structure with less work and with longer-lasting effects.

In March of 1952 the Arboretum entered into a contract with the Monsanto Chemical Company to field-test its new soil-conditioning product, Krilium. To our knowledge these tests were to be the first large-scale trials on the Pacific Coast. The level of interest for these experiments was confined to the home gardener. Certain questions were to be answered for problem soils of southern California. Some of them were: (1) What is the most efficient way of applying Krilium? (2) How much Krilium is needed for various types of plantings? (3) What advantage to germination, growth, and flowering, may be gained from the use of Krilium?

In this article, the types of experiments conducted will be outlined and a few of the resulting observations discussed. The reader who wishes additional information of a more fundamental and comprehensive nature is referred to the publication, *Soil Science,* vol. 73, 1953.

Where the terms "conditioner" or "soil conditioner" appear hereafter in this article, Krilium is the item under discussion unless otherwise indicated. One other word of explanation: "soil conditioning" as used in this paper concerns only the physical structure of the soil. Krilium acts upon the clay particles of the soil. This action, resulting in aggregation—i.e. formation of soil crumbs—is one of clay particle rearrangement. Instead of individual clay particles sheeting out in a relatively flat plane, the particles are drawn together and in a sense "glued" to one another. Just how this reaction takes place is beyond the scope of the present article.

Now—on with the Operation, Soil Conditioning: Merloam and Loamaker were tested; they are currently on the market. Other experimental formations of Krilium were likewise included.

Methods of application depend upon the size of the area to be treated. Krilium in dry form was applied by hand to hundred-square foot plots, and to larger areas by using a small fertilizer spreader. Certain formulations being dissolvable in water, the conditioner solution was applied by using a sprinkling can and a hose equipped with a siphon attachment.

Incorporation methods also depend upon the size of the area, and the depth of treatment. A power rotary tiller proved to be the most efficient tool when six-inch deep treatment was desired. The use of a spading fork followed by raking was found to be a very good method, although more physical work was involved in the initial stages of breaking up the soil. Incorporation at one-half to one inch depth was accomplished by raking. Regardless of the method used, thoroughness in the mixing of the conditioner with the soil is of paramount importance.

Planting began in March as soon as the ground was dry enough for cultivation, and continued until late October. There were three major divisions of plant material used: (1) lawn grasses; (2) common annual flowers; and (3) common garden vegetables. Seven species of grasses, plus five lawn-grass mixtures were used. The flower garden was comprised of twenty annual species, including: alyssum, snapdragons, stock, zinnias, marigolds, and calendulas. The vegetable garden consisted of sixteen species, including: beans, carrots, corn, squash, tomatoes, and beets.

In addition to the planting experiments, the effects of repeated mechanical tillage of conditioned soil and problems of erosion control were also under test.

Certain restrictions limit the detail into which we may go conecrning the results of the experiments to date. Many of the gardening and horticultural publications within recent months have reported information covering a wide range of experience with Krilium; in general, our data agrees with that already reported—but a few of the facts might bear repeating:

First, the amount of soil crumbs or soil aggregates produced showed an increase of 50-60 per cent in treated soils as compared with untreated soils.

The rate of water penetration was increased two to three times in treated soils above that of the untreated soils.

Lateral spread of water from irrigation ditches was increased both in distance attained, and in rate of movement, by Krilium application. Surface water run-off and soil erosion were greatly reduced by the Krilium applications.

Hand weeding and cultivation was made easier and more effective by use of Krilium.

The loose soil structure resulting from the initial Krilium application persisted throughout the experimental period. Control soils and soils treated with compost or steer manure lost their initial loose structure by the end of the experimental period.

Questions in the mind of the home gardener probably concern also the plant's response in Krilium treated soil. Observations which hold the answers to these questions are naturally difficult to evaluate to the satisfaction of everyone. It can be

said, however, that in some of the experiments, germination was expedited in Krilium treated soils; in others, germination response was indifferent. Similar trends were observed in both growth and flowering, in the case of each of the three plant-type divisions under discussion.

A temporary plateau has been reached, it would appear, in the number of ways Krilium can be used and in the expected contributions Krilium can make to the solving of soil structure problems. Recently the price of Krilium was lowered; this should encourage sales, and consequently, a more wide-spread use of Krilium, which may result in home experiments of some significance.

Monsanto is the company which has pioneered in the chemical conditioning of soils. As research continues, improvement in the product as well as favorable plant responses is anticipated. If the present reader is a gardener with a bump of curiosity, he will want to obtain first hand knowledge of at least one of the new soil conditioners. He can do this by small-scale experimentation of his own.

COVER PICTURE

The exhibit of South African plants pictured on our cover will be recognized by many of our California readers who attended the 1953 California International Flower Show at Hollywood Park in March. In the current issue of *Lasca Leaves* (p. 37) the article by Mildred Mathias describes many of these plants.

BIRD NOTES

W. Dan Quattlebaum

Now that the noise and confusion of road-making and landscaping are past and a quieter atmosphere has returned, the bird life at the Arboretum is almost normal again. During the confusion, three of the forty-five residents, Road-runner, Valley Quail and Piedbilled Grebe moved away. But a pair of Grebes returned last fall, and in the spring this year nested in the cat-tails. The Red-wing Blackbirds that forage during the day didn't mind the changes, and in the fall some 800 to 1,200 came into the cat-tails and tules every evening for their vesper chorus and night's repose.

One outstanding resident, the Red-bellied Hawk, stays on in its old ancestral "estate," and is not found any other place within fifteen miles. A local birdman and teacher remarked to me that if the Arboretum gave this scarce hawk a home, this alone would make it a notable sanctuary.

The more numerous of the resident species are the Redwing Blackbird, Mourning Dove, Band-tailed Pigeon, Crow, Red-shafted Flicker and Sparrow Hawk.

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During the past winter (1952-53) there were the usual bird visitors: such as the Mallard, Canvas-back, Cinnamon Teal, Pintail, Ring-necked Duck, Ruddy Duck, Audubon Warbler, Hermit Thrush, Ruby-crowned Kinglet, Mountain Chicadee, Robin, Waxwing, and Gambel's White-crowned Sparrow.

WOOD SONG

"I heard a wood-thrush in the dusk
Twirl three notes and make a star—
My heart that walked with bitterness
Came back from very far.

"Three shining notes were all he had,
And yet they made a starry call—
I caught life back against my breast
And kissed it, scars and all."

Sara Teasdale

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"In nature nothing is insignificant, nothing is ignoble, nothing sinful, nothing repetitious. All the music is great music, all the lines have meaning."

From *Foreword* of "Green Laurels"
Donald Culross Peattie

SOUTH AFRICA IN YOUR GARDEN

MILDRED E. MATHIAS

SOUTHERN CALIFORNIA gardens offer many attractions for the armchair traveller. Our Mediterranean climate enables us with little or no difficulty to grow plants from many parts of the world so each garden becomes a lesson in geography. We have dragon trees from the Canary Islands, bottle brushes and eucalyptus from Australia, oleander, olives and cypress from the Mediterranean, pepper trees from South America. The horticultural impressions of the area are obtained almost entirely from imported plants. Their removal from our cities and towns would change the whole face of the landscape.

South Africa has been the source of many fine plant materials in common use as ornamentals in Southern California. The variety of terrain and climate in South Africa more than matches our area—the Cape region with a flora closely related to that of Australia; the Karro, a vast basin area with shallow soils and rocky surfaces, low rainfall and extremes of temperatures; the park-like veld; the eastern coastal belt with luxuriant tropical vegetation, heavy rainfall and uniform temperature; and even sub-alpine areas in the high mountains. It is a region rich in plants, more than 2,600 species being listed for the Cape Peninsula alone in the most recent flora.

Our interest has been attracted to South African plants by the newly chosen flower for the City of Los Angeles, the Bird-of-Paradise, *Strelitzia reginae*. This exciting exotic with its banana-like foliage and brilliant inflorescence well deserves its common name. It is easily grown in our gardens and is useful as a specimen plant or source of cut flowers. Its tree-like relative, *Strelitzia nicolai,* is another South African plant we use for a tropical setting.

South African trees in cultivation here include *Phoenix reclinata,* the small date-palm, so much in demand for modern landscaping, and *Podocarpus gracilior,* one of the finest evergreens for our area. The latter tree, the African Fern-Pine, has been known in the trade as *Podocarpus elongatus.* The Cape Chestnut, *Calodendrum capense,* is an excellent flowering tree represented by a few fine specimens in West Los Angeles. The silver-tree, *Leucadendron argenteum*, an interesting specimen plant, grows natively only on the Cape Peninsula but has become widely spread, though still uncommon, in cultivation. *Harpephyllum caffrum*, the Kafir Plum, is highly recommended as a small ornamental tree. The inland desert areas of Southern California *Rhus lancea* is proving satisfactory and a good specimen may be seen at the Department of Agriculture Date Station in Indio. *Rhus viminalis* is another species worth growing which may be seen at the Botanical Garden of the University of California, Los Angeles.

Among the shrubs are the Bushman's Poison, *Acokanthera venenata.* the dainty Winter-sweet, *Acokanthera spectabilis,* and the Natal Plum, *Carissa grandiflora.* Probably one of the best known South African plants in our gardens is also one of our finest espalier materials, *Grewia caffra.*

A list of other South African plants comparatively common as ornamentals in Southern California reads like a nursery catalogue: *Asparagus, Aster filifolius,* and *Aster fruticosus, Cissus capensis. Diosma. Erica. Gardenia thunbergii, Melianthus, Sparmannia, Tecomaria.* Bulbous and corm material from below the equator is even more important. What would our gardens be without *Gladiolus, Morea, Tritonia, Chasmanthe, Agapanthus, Olivia, Freesia,* and *Watsonia?* Succulent fanciers will add to the list the Aloes, Euphorbias, the curious mimicry plants, Stapelias, Crassulas, Cotyledons, and many other genera. *Dimorphotheca Gazania. Gerbera. Nemesia.* and our winter bedding *Lobelia.* are other introductions from South Africa. All our garden geraniums, species and hybrids of the genus *Pelargonium.* are of South African origin. If we removed the Pelargoniums and Mesembryanthemums, our hillsides would look barren.

Some of these plants are so common in our gardens that we forget they are foreigners. And yet their introduction into horticulture is relatively recent. Even now we are adding to our list by introducing more South African plants such as the beautiful *Dais cotinifolia.* species of *Ochna. Mesembryanthemum. Erythrina.* and many other fine ornamentals. Native plants recommended for cultivation include some which we occasionally grow and others not yet introduced here: *Bauhinia galpinii. Podalyria calyptrata. Polygala virgata. Hypericum leucoptychodes. Greyia sutherlandii. Sutherlandia frutescens. Plectranthus ecklonii. Chaenostoma grandiflorum. Virgilia divaricata* and *Virgilia oroboides. Bolusanthus speciosus. Protea* species, *Leucospermum reflexum. Serruria florida. Erica* species, *Senecio tamoides,* and *Podranea ricasoliana.*

Plant exploration in South Africa dates from the 17th century. One of the earliest collectors was Justus Huernia, a clergyman, who stopped at the Cape on his way to the Dutch East Indies. The curious Cape flora proved irresistible and he sent a few plants to his brother, a professor at Leyden. Four figures of Cape plants

collected by him are included in the 1644 Amsterdam edition of Theophrastus, "Historia Plantarum"—*Haemanthus coccineus, Cotyledon orbiculata,* a *Ceropegia* and *Kniphofia,* the red-hot poker plant. All of the earliest collections went to Holland, particularly to the botanical gardens at Leyden and Amsterdam.

The first flora of South Africa is that by the "Father of Botany," Linnaeus, who published a "Flora Capensis" in 1759 in which he listed 502 species of Cape plants. One of Linnaeus' students, Thunberg, known as the "Father of South African Botany," travelled in South Africa for three years, from 1772 to 1775 and published extensively on the plant collections obtained in these years. His work laid the basis for all future floras of the region.

In 1772 the royal gardens at Kew sent Francis Masson to the Cape to collect plants. In two visits Masson spent over twelve years in South Africa sending back to Kew a large number of both living and dried plants. It was largely his South African collections which gave Kew its top place among European gardens of that day.

By 1787 when Curtis began the publication of the Botanical Magazine many South African plants were being grown in European gardens and greenhouses. The early volumes contain fine colored plates of South African flowers and give us some of the history of their introduction. In 1740 Peter Collinson sent bulbs of Gladiolus to John Bartram in Pennsylvania and in 1760 he sent seeds of geranium (probably a *Pelargonium*). These were perhaps the first South African plants to reach the New World.

For those with more interest in South African plants the following books may be recommended. While these books are not generally available there are copies in local libraries.

Coombs, Sarah V., *South African Plants for American Gardens.* 364 pp. New York. 1936.

Eliovson, Sima, *Flowering Shrubs and Trees for South African Gardens.* 146 pp. Cape Town. 1951.

Hutchinson, John, *A Botanist in Southern Africa.* 686 pp. London. 1946. A copiously illustrated account of personal experiences in the field and a discussion of the flora.

Marloth, Rudolf, *The Flora of South Africa.* 4 volumes. Capetown. 1913-1915. Many fine sketches and photographs.

Rice, E. G., and R. H. Compton, *Wild Flowers of the Cape of Good Hope.* Kirstenbosch. 1950. Two hundred fifty colored plates published by the Botanical Society of South Africa.

A NEW PERIODICAL

Baileya: a Quarterly Journal of Horticultural Taxonomy. Vol. I, No. 1, March 1953. Published at Bailey Hortorium, New York State College of Agriculture, a unit of the University of New York, Cornell University, Ithaca, N.Y. 23 pp. Multilith process. $2.00 yr. subscription. Address G. H. M. Lawrence, Director, Bailey Hortorium, as above.

Items of particular interest noted in its pages:

Metric system to be used for plant measurement records, since this decimal system is more applicable to plant measurements of less than an inch, and since it is a system more widely used outside this country—areas to which this periodical will be sent as extensively as within this country. A scale of equivalents is to be retained inside the back cover for readers' convenience.

Taxon (plural, *taxa*): a new term coming into use in botanical and horticultural literature, "coined more than 25 years ago . . . so its newness is one of usage rather than origin," referring to an individual plant, population, or group of plants . . . without specifying what category (variety, species or genus) is intended . . . "often the correct category is not known, one may not wish to hazard a guess. . . . "

Cultivar, distinguished from *variety.*

Use and disuse of *dioecious* and *monecious.*

Correct botanical name of Horse-radish.

International Code of Nomenclature for Cultivated Plants, approved provisionally at International Congress of London, 1952 . . . in final proof state . . . should be in printed pamphlet form early this summer. . . . "

"Hortus Third" . . . out in late 1955 or sometime in 1956.

SUMMER ANNOUNCEMENT

Southern California Horticultural Institute: meets the 3rd Thursday of each month, at the Recreation Building at 18th and Toberman, Los Angeles. Plant display at 7:30 p.m. Meeting call to order, 8 p.m.

July: speaker, Mr. Ladislaus Cutak.

August: speaker, Mr. Ralph Cornell.

Sept.: speaker, to be announced.

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"It is the privilege of the naturalist to concern himself with a world whose greater manifestations remain above and beyond the violences of men."

HENRY BESTON

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A newly formed society of interest to many readers of *Lasca Leaves* is the *Plant Propagators' Society.* Organization took place at Hotel Statler, Cleveland, Ohio, on March 8th and 9th, 1952. Proceedings were published and present an excellent selection of papers on problems of plant propagation. Further information may be had by corresponding with Edward H. Scanlon, Commissioner of Shade Trees, Cleveland, Ohio, Secretary-Treasurer of the Society.

Hand pollination of cherimoya.

Persimmon flowers.

THE POLLINATION OF SOME SUBTROPICAL FRUIT TREES

C. A. SCHROEDER
University of California, Los Angeles

THE FAILURE of fruit production in subtropical fruit trees may result from several causes, among which inadequate or lack of pollination may be the major cause. Limiting factors such as excessive heat or cold, lack of winter chilling, or failure to provide adequate soil moisture at critical periods also may cause crop failures.

Not all fruit-producing plants require pollination for the fruit to set, however. Among plants of this latter type are the citrus fruits, most of the figs except the Smyrna type, the oriental persimmon, the banana and the pineapple, to mention a few. These plants require no pollen or pollinating insects in order to set fruit. The fruit merely begins to develop from the pistillate or female flowers by an internal stimulation, a process called parthenocarpy.

Nearly all other common fruit plants, aside from those mentioned above, require pollination or the transfer of pollen from the anthers to the stigma, either by mechanical means, wind or insects. In most cases plants will set fruit when pollinated with their own pollen, but in certain fruits, such as the almond, one variety must be pollinated with pollen from a tree of another variety, although both varieties produce pollen. Such plants are termed self-sterile.

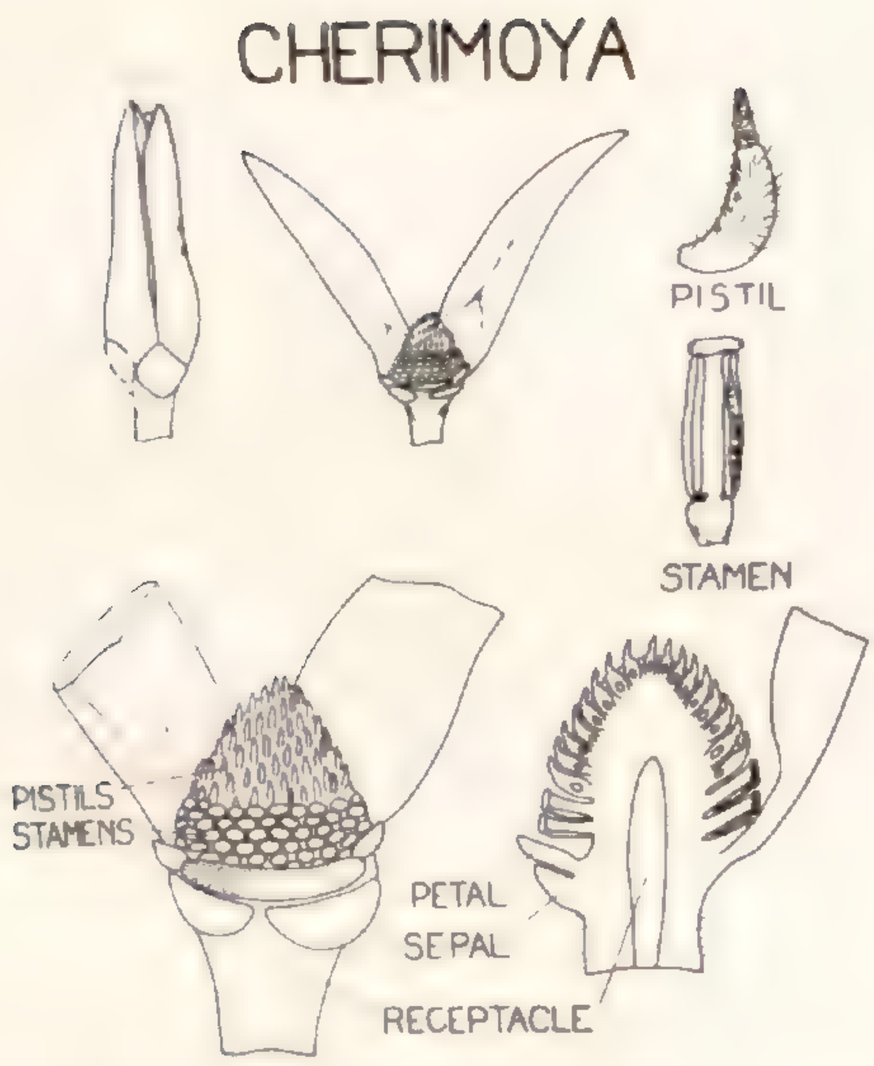
The following remarks represent the general knowledge which we now have concerning the specific pollination requirements and responses in a few of the more common subtropical fruits in southern California.

CITRUS

All citrus fruits, as mentioned previously, set parthenocarpically, hence require no insects to pollinate the flowers. Some varieties, such as the Washington navel orange, in fact produce no pollen. Actually the presence of working bees in citrus trees may cause excessive seediness, which may be objectionable in some instances.

AVOCADO

The problem of pollination in the avocado has been one of considerable speculation and concern. While the tree produces an abundance of bloom, sometimes a half million flowers on a moderate sized tree, frequently only a few, or perhaps none, of these flowers may set fruit.



Detail drawing of cherimoya flower parts.

The avocado flower is perfect with both pistil, which gives rise to the fruit, and pollen in abundance. There has been observed among the avocado flowers a tendency not to shed their pollen when the stigmas of these particular flowers are receptive, a phenomenon termed dichogamy. While in some instances this lack of coordination of maturity of the female and male elements may be of some importance in determining the amount of fruit which will set, it can be shown by observation of isolated trees and block plantings of single varieties that, in general, cross pollination is not required for the varieties grown in California. The factor which appears of greatest importance which may limit or sometimes prevent fruit set is the low daily mean temperature during the flowering season. If the mean temperature during the bloom is below 58-60°F., little or no fruit will set, for example, in the Fuerte variety, but when the mean temperature rises then fruit set is usually observed. Briefly then, if other factors such as soil moisture and mean temperature are favorable, pollination appears not to be a limiting factor, in fruit set of the avocado. Experimental and observational evidence indicates that the avocado is pollinated by insects.

CHERIMOYA

The cherimoya, or custard apple, is grown as a dooryard orchard tree or ornamental in the warmer areas of southern California. Frequently inadequate fruit set is observed, although in many cases the plants are healthy and produce an abundance of flowers. It has been noted that the cherimoya in many areas also exhibits the phenomenon of dichogamy. Although the flowers are perfect, with both pistils and pollen, apparently these do not mature simultaneously, hence pollination within a given flower is not achieved and the flower falls. The honey bee apparently does not frequent the cherimoya flower or cannot effect pollination. Other pollinating insects are also infrequent visitors on this plant. The practice of hand pollination, however, has been shown to be a feasible and reliable method to induce fruit-set in the cherimoya, such that adequate crops of well-shaped fruit may be obtained. A few precautions must be taken in order to insure success of the practice. When the cherimoya flower first opens it is receptive to pollen, the stigmatic mass in the center is white and sticky, but the pollen on this particular flower is not shedding. After a few hours, the period depending upon humidity and temperature, the stigmatic surface dries and is no longer receptive, but the pollen begins to shed. This freshly shed pollen can be collected in a small glass vial, and with the aid of a small, soft camel's hair brush can be transferred to another freshly opened flower on the same tree or on another tree. The pollen is distributed evenly over the stigmatic surface by a gentle rotation of the brush. If the pollen is fresh and not allowed to dry excessively, hand pollination will result in the set of fruit of good size.

FEIJOA

The feijoa, *Feijoa sellowiana,* a common ornamental grown also for its fruit, has been observed to set fruit more adequately when other seedlings or other varieties are in close proximity, so that the insect visitors may provide the cross-pollination which is necessary. Isolated specimens frequently set poor crops or are barren. The variety Coolidge, however, is moderately self-fruitful and will produce fruit when planted alone. It is advisable to plant together two or more varieties or seedlings of the feijoa if fruit production is desired.

CARISSA

Another fruiting shrub, the African carissa, *Carissa grandiflora,* sometimes is barren when planted as an isolated specimen. It has been observed that flowers on certain plants have pollen, while flowers on other plants are without pollen. It is necessary, therefore, to provide pollen in order that pollen sterile plants can set fruit. The practical means of achieving this is to plant *Carissa* as groups of seedlings or different varieties so that some of the plants, by chance, will produce pollen. Apparently insects other than bees are the effective pollinators of this plant.

FIG

The common figs represented by such varieties as Mission, Adriatic, Kadota and Brown Turkey set fruit parthenocarpically, hence require no pollination. One variety grown in California, the Calimyrna, is a Smyrna-type fig which requires the pollen from the caprifig and the activity of an insect, the Blastophaga wasp. The caprifig is a distinct fruit which is not edible but produces pollen and provides the home for the Blastophaga wasp, which lives most of its life cycle within the caprifig fruit. Before the Calimyrna fig can set its fruit it must be visited by the Blastophaga wasp, which has just emerged from the caprifig with some pollen on

its body. This pollen is scattered over the Calimyrna fig flowers borne on the inside of the developing fruit. If this pollen is not provided, seed is not formed and the young fruit drops. Caprifig fruits are obtained from growers who maintain trees of this type. A few of the caprifig fruits are placed in the Calimyrna fig tree when the young Calimyrna fruits are about one half inch in diameter.

PERSIMMON

The oriental persimmon (*Diospyros kaki*) usually is observed to set fruits in great quantity. Because most of the common varieties such as Hachiya and Fuyu produce no pollen, this fruit must set parthenocarpically. Occasionally a natural shedding of immature fruits is observed and the question of the possible benefit of pollination is asked. It is thought that the provision for pollination will not increase fruit set measurably in this case, but that the underlying cause of excessive fruit shed is related to the root-stock type employed in the propagation of the tree itself. It has been noted that all varieties, when propagated on *Diospyros kaki* root, appear to retain their fruits better than similar trees propagated on *D. lotus* rootstock. If the persimmon tree is grown under favorable conditions and on the kaki root-stock, pollination appears to be unnecessary for adequate fruit production.

PAPAYA

Attempts frequently are made to grow the papaya in California. This plant is very tender to cold and usually survives here only when grown under glass. Pollination is required for fruit-set in this plant. Because the plants usually are dioecious, that is, there are male plants and female plants, it is necessary that a pollen-bearing specimen be available near those plants which bear female flowers. The practical solution of this problem is to grow at least three seedling plants in a group so there is a chance that at least one may produce pollen. There is no practical way to determine the sex of a papaya plant before it blooms. Sometimes papaya plants have perfect flowers with both pistil and stamens. Such plants are self-fertile and will produce fruit, provided pollination can be provided either by insect or by hand. If the plants are grown under glass and natural pollinators such as the honey bee are eliminated, then hand pollination must be practiced for fruit set.

* * *

EDITOR'S COMMENTS

The response to request for articles on botanical and horticultural subjects by authorities in their fields, has been wholly gratifying. The current material proves its appeal to readers interested in either or both fields.

Potential contributors to future issues of *Lasca Leaves* may find the following points of interest: *Lasca Leaves* chiefly solicits manuscripts of from three to six typed pages, double-spaced, with illustrative plates if possible. It also welcomes suggestions of worthy reprint material to be found in other periodicals which might otherwise not reach the majority of our readers. Kindly send material to Editor, *Lasca Leaves*, Box 688, Arcadia, California. If material is of seasonal significance, it should reach the editor's hand not later than the first of September, December, March, or June, for the autumn, winter, spring, or summer issues respectively.

* * *

Contributors to the autumn issue of *Lasca Leaves* will include Samuel Ayres, Jr., M.D., "Reflections on a Recent Horticultural Visit to South Africa;" V. T. Stoutemeyer, of the Department of Floriculture and Ornamental Horticulture, University of California, Los Angeles, "Gardening With Woody Plants;" Mildred Davis, "Perennials Will Grow in California," a timely paper for the efficient gardener who likes to have his ground well prepared and "seasoned" for next year's plantings. Mr. Philip Chandler's "Hardy Tropicals for the Sun" scheduled for the present issue, is also on the future calendar of articles, as well as material from some of our contributors from other parts of California, and out-of-state.

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Organizations wishing to make announcements in the Calendar Column of *Lasca Leaves* (see p. 53) are asked to send pertinent data—place, time of meeting, visitor regulations, etc.—to the Plant Soceities Edtior, George H. Spalding, Box 688, Arcadia, Calif., not later than the first of December, March, June, and September, to meet the quarterly press dates.

FIG. A. *Phacelia tanacetifolia*, showing finely divided leaves and small flowers in coiled cymes. FIG. B. *P. Parryi*, with merely toothed leaves and larger, more or less bell-shaped flowers. FIG. C. Flower of *P. minor*, the coastal purple "Wild Canterbury Bell" with constricted corolla. FIG. D. Flower of *P. campanularia*, the desert blue "Wild Canterbury Bell," not constricted. FIG. E. A flower of *Nemophila* (Baby-blue-eyes) with recurved bracts between the sepals as contrasted to a *Phacelia* flower above.

SOME CALIFORNIA PHACELIAS

PHILIP A. MUNZ

ONE OF the most complex and diverse groups of plants native to California is the genus *Phacelia*. In the tentative treatment for a proposed manual of the botany of the state, on which I am at work with Dr. David D. Keck of New York Botanical Garden, eighty-three species and many varieties are recognized. The plants run all the way from unattractive weedy perennials with a spread of several feet to minute erect slender-stemmed annuals 1-2 inches high. Flower size varies from less than one-eighth of an inch to an inch or more, and color from white or cream or yellow to violet, purple or deep blue. The leaves may be entire, toothed, lobed or several times divided into fine segments. But one thing that almost all species have in common is the coiled cyme or flower cluster like that of the old-fashioned Garden Heliotrope and it is because of this inflorescence and the blue color that many of the species are commonly called "Wild Heliotrope." *Phacelia,* however, bears a fruit which is a capsule and belongs to the family *Hydrophyllaceae,* while the true Heliotrope (*Heliotropium*) has the ovary deeply 4-lobed and produces four one-seeded nutlets. It belongs to the related family *Boraginaceae,* together with the Forget-me-not (*Myosotis*), Fiddle-neck (*Amsinckia*), and *Echium*. A close relative of *Phacelia* is the common Baby-blue-eyes *Nemophila* which can easily be distinguished by the reflexed bract between the bases of adjacent sepals, so that the calyx looks as if it had ten parts: 5 erect and 5 reflexed. In *Phacelia* there are only the normal five sepals.

Of the many species of *Phacelia* only a few are attractive enough to warrant an interest in having them in our gardens. These fall into two groups: (1) the small-flowered "Wild Heliotropes" with their numerous blue or violet-blue flowers in conspicuous coiled cymes, and (2) the "Wild Canterbury Bells" with much larger flowers, somewhat bell-shaped, and in more open, less conspicuously cymose clusters. Of the "Wild Heliotropes" the one most commonly used is *Phacelia tanacetifolia*. This species was first figured in 1835 (Edwards, Bot. Reg. 20: pl. 1696), seeds having been sent to England by David Douglas. The statement was made "It is a hardy annual, thriving in any soil or situation." Apparently it created some interest, since within four years it was illustrated by two other British works (Sweet, British Fl. Gard. 7: pl. 360, 1836 and Curtis, Bot. Mag. 66: pl. 3703, 1839). It has continued to be listed in seed catalogues down to the present. In California it has been used by Theodore Payne as a common constituent of his wild flower mixture. Growing to a height of about two feet, erect, branched above, with numerous dense coiled bluish clusters, it is quite effective particularly in a mixture with California Poppy (*Eschscholzia*). Some related species of *Phacelia* like *P. distans, P. cicutaria, P. platyloba, P. cryptantha* and *P. vallis-mortae* are so much like *P. tanacetifolia* that they are separated largely by technical characters. They are for the most part somewhat smaller-flowered and with shorter stamens and are not so much used in gardens. In the wild, *P. tanacetifolia* is widespread, growing from Lake and Butte counties in and about the Great Central Valley of California south to Lower California and across the Mojave Desert to Nevada and Arizona.

The above group with rather small flowers and finely divided leaves has peculiar scales in the corolla tube at the base of the filaments. It is not a viscid or especially glandular group and is quite different from the larger-flowered series called "Wild Canterbury Bells." These have much showier flowers and lack corolla scales near the base of the stamens and the leaves are scarcely if at all divided. The plants are covered with pin-head hairs which give off a gummy secretion that makes them more or less viscid and possesses a rather characteristic odor. There are several well known species that can be distinguished as follows:

A. Stamens with a dilation or wing at base.
  B. Corolla open-bell-shaped, the basal tube about as long as the expanded limb.
    C. Flowers one-half to two-thirds inch long, purple to violet, with paler center. Coming from elevations mostly below 2500 feet, in the Coast Ranges from Monterey County to Lower California..... *Phacelia Parryi*
    CC. Flowers one-fourth to one-half inch long, mostly white. From elevations of 3000 to 7000 ft., mountains from Santa Barbara County to the San Gabriel Range..... *Phacelia longipes*
  BB. Corolla tubular-bell-shaped, the tube about twice as long as the limb.
    C. Flowers purple, slightly constricted at the throat. Coastal drainage of Southern California..... *Phacelia minor* (*Whitlavia*)
    CC. Flowers deep blue, not constricted at the throat. Deserts..... *Phacelia campanularia*
AA. Stamens without a basal dilation or wing, the corolla spreading from the base, not bell-shaped.
  B. Flowers one-third to two-thirds inch long, blue or purplish with whitish center. Coast Ranges from Monterey Co. to San Diego Co..... *Phacelia viscida*
  BB. Flowers one-half to one and one-fourth inches long, violet to bluish, the center of the same color as the periphery. Santa Barbara Co. to Lower California. *Phacelia grandiflora*

The above are most apt to be found in disturbed places, particularly after burns, when they may give color to large areas formerly covered with brush. Theodore Payne has used and offered for sale all of these, except possibly *P. longipes*, and they are common constituents of wild flower mixtures. They again are quite effective with California Poppies. Showy and bright-colored they are very ornamental in mass plantings. Their use in European horticulture goes back to about the middle of the last century or a little later and they are still offered by seedsmen.

Fortunately, both of the groups of *Phacelia* so far discussed are easy to manage, seed germination offering no difficulty. Like most California wildlings they should be planted in the late fall just about when the winter rains set in. Then they germinate readily and grow slowly during the colder months, developing good root systems and getting ready to come into flower early in the spring. On this basis they bloom for quite a period of time. If however, they are sown later and come into flower just as the hot days of middle or late spring arrive, they tend to finish up their life cycle rapidly and have a short blooming season.

I think it only fair to warn gardeners that these glandular species are poisonous to many people. In my early days of botanizing in California I frequently visited burns in the chaparral, since so often one can find plants there which he rarely meets elsewhere. Then, and later on the desert, I got severe cases of dermatitis which I thought due to Poison Oak. It occurred to me one day after a bad case following a desert trip, that Poison Oak does not grow on the desert. So I began experimenting by rubbing small bits of plant on the tender skin of the upper arm. Before long I found that all species of *Phacelia* which are viscid-glandular can do the job, as can some other members of the family like the so-called Poodle-dog Bush (*Turricula Parryi*) a tall glandular, purple-flowered, weedy looking thing which occurs in our lower canyons and on brushy slopes. Similar experimentation with groups of students and friends leads me to believe that at least one person in eight is susceptible to these plants.

Of the other Californian phacelias several can easily be grown in the garden. In fact, *P. ciliata* is in the trade. It has small pale blue flowers and after anthesis the calyx becomes much enlarged and membraneous. Several species on the desert are very conspicuous there in a moist spring, particularly those of the *P. crenulata* group. These have more or less oblong, pinnately lobed leaves and violet to bluish- purple flowers about one-third inch long. But it is very difficult to get good seed germination and they also have the abundant glands which can be toxic.

Of the related genus *Nemophila,* which has the extra bracts between the sepals, California offers two good garden plants. One, the Baby-Blue-eyes, has been used as a garden plant for a long while. It has gone under the names *N. Menziesii* and *N. insignis* and is a very polymorphic species, having races differing greatly in size and blueness of the flowers. It is found through most of California except the deserts and high mountains. A form from the foothills of the Sierra Nevada seems to offer especially desirable size. The other species, *N. maculata* or Fivespot, comes also from Sierran foothills and grows from Kern Co. to Plumas Co., the rather large white flower having five purple spots. The low very diffusely branched plants attract much attention when in flower. Seeds of both these species are in the trade.

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"I hear you, little bird,
Shouting, a-swing above the broken wall.
Shout louder yet; no song can tell it all;
Sing to my soul in the deep, still wood:
'Tis wonderful beyond the wildest word:
I'd tell it, too, if I could.

EDWIN MARKHAM

• • •

"Hark! that's the thrush; he sings each song twice over,
Lest you should think he never could recapture
The first, fine, careless rapture."

GROWING NOTES

GEORGE H. SPALDING

ONE of the most gratifying experiences a plantsman can have is to succeed where others have failed. Complete success in growing a difficult plant or group of plants is always the goal, but every successful step towards this goal is a milestone to be remembered.

Over the years, numerous attempts have been made to grow various members of the *Protea* family in Southern California. To date the failures have far outnumbered the successes. This family which occurs abundantly in Australia and South Africa contains shrubs and trees of great beauty. Some are valuable commercially for cut flowers. We have begun research at the Arboretum aimed at learning the secrets of successfully growing members of the *Proteaceae* in our area.

The research has been divided into two sections; experiments in each are being carried on concurrently: 1), the collection of all available data from growers in this group who are having some degree of success, and 2), experimentation at the Arboretum with various soil mixtures using several types of containers, and including field plantings with different soil types and exposures.

One of our first experiments, while far from being conclusive, has produced some very interesting results which are reported here for the purpose of making the information available to all who wish to experiment with this group.

Seeds of a *Grevillea* species (probably *G. banksi*) were planted, August 28, 1952, in a 4″ pot. The sowing medium was Georgia Peat and Sponge-rok in equal amounts. Seed germinated September 18, 1952 (21 days). Eight seedlings of uniform size were chosen for the experiment. All were planted in a soil mixture composed of:

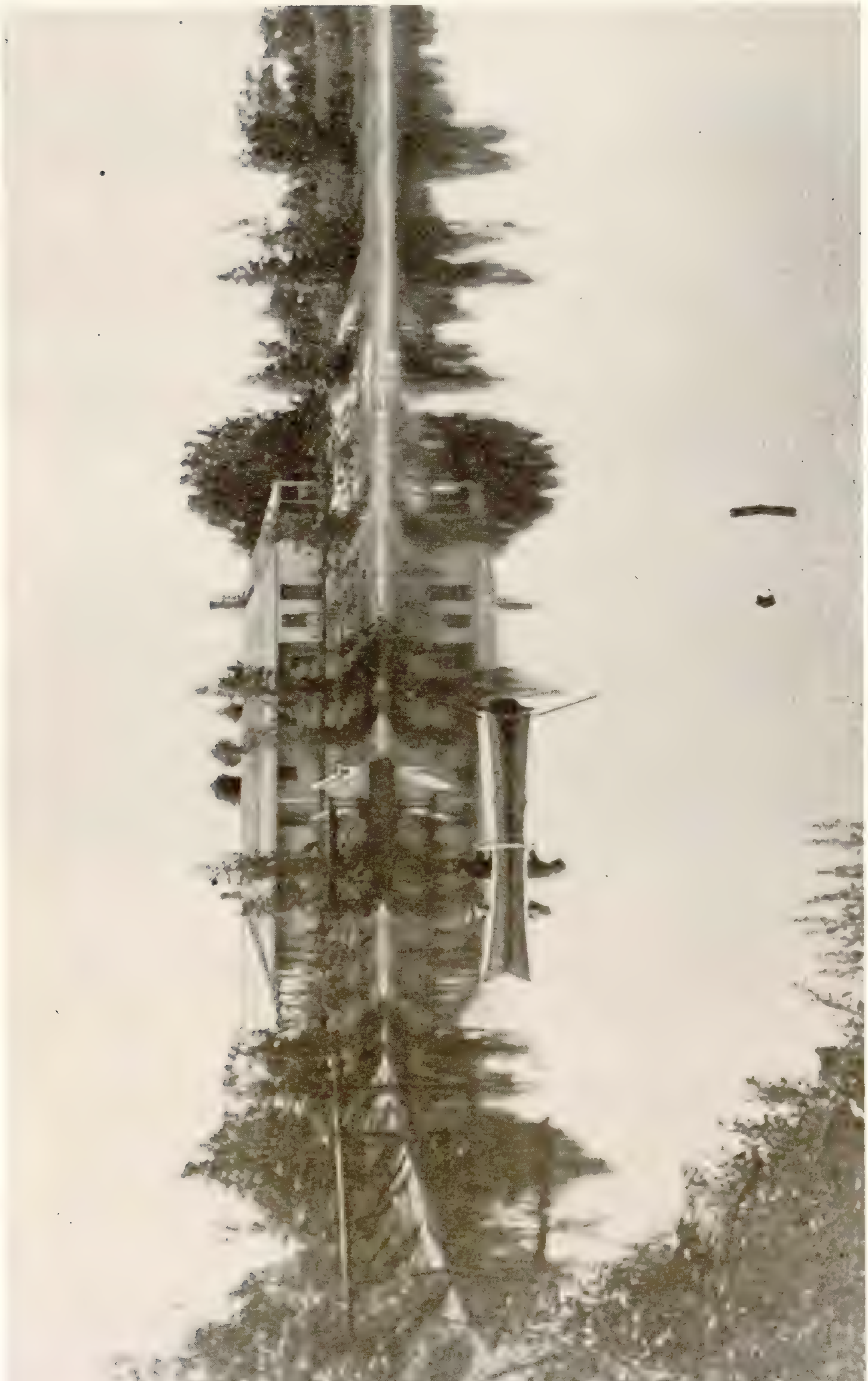
1 part soil (heavy loam)
1 part composted straw
6 parts Canadian Peat
4 parts decomposed granite

Four plants were potted in standard 4″ clay pots September 27, 1952. On the same date the other four were planted in "Cultura" Peat Moss Seedling Pots. These pots are manufactured from natural peat turfs in such a manner, that the individual pots are separated by saw cuts, but still connected through a thin bottom plate, so that bars are created of up to twenty-four pots, which makes handling easy. An added advantage of the "Cultura" pot is being able to plant pot and all directly in the ground, thus, the plant roots are undisturbed in the transplanting, a condition which in itself may be of prime importance. For approximately two months the growth was more or less uniform for all eight plants. Following this period there was a very decided difference in the rate of growth and leaf color.

Comparative growth of Grevillea species in "Cultura" peat moss pot, and in standard clay pot.

The accompanying photograph taken February 2, 1953, shows very well the differences. The plants in the "Cultura" pots were twelve inches high with good green color and straight stems. The four inch pots were only four inches high and lighter green. No definite conclusions can be drawn from this initial experiment but the results are obvious. It should also be noted in the photograph that the roots in the "Cultura" pots spread horizontally as well as vertically and because the tubes were contiguous the horizontal rooting was unimpeded as compared to the clay pots.

Reports on other experiments and on the progress of the field planting will be published in *Lasca Leaves* from time to time.



HUGO REID ADOBE—1879

THE HOMESITE ON RANCHO SANTA ANITA (con't.)

SUSANNA BRYANT DAKIN

THE first lay owners of Rancho Santa Anita were a handsome happy pair—the "Scotch Paisano," Hugo Reid and the Indian wife whom he named Victoria. Both were tall, with fine figures—he, sandy-haired and blue-eyed; she, Castilian in appearance, with lustrous dark eyes and hair. He called her, often, his "rose of Castile" and featured such roses in the home garden. The four children of her early Indian marriage he adopted and educated as his own, sending the boys to California's first institution of higher learning, Hartnell's *colegio* near Monterey.

Reid himself was a Cambridge man, best known as a writer, and a framer of California's constitution in 1849. He introduced advanced farming methods during his tenure of Rancho Santa Anita (1838-1847). Frequently he consulted with his French *vecino,* Jean Louis Vignes, and the Kentuckian William Wolfskill, who in Bancroft's "Pioneer Register" are characterized as "the pioneer's of California's greatest industry, the production of wine and fruit." Over the years Don Hugo and Doña Victoria also exchanged seeds and slips, small trees and vines with the *padres* at neighboring San Gabriel Mission.

Writing for advice to his crony "Don Abel" Stearns, the great landholder of that pastoral era in California history, Reid listed the planting surrounding his home at Santa Anita early in 1844. Prefacing the detailed inventory, he wrote that "the vineyard is walled around. It contains vines totalling 22,730 and ground sufficient to make up the number of 40,000, besides 430 varied fruit trees."

Such diversity was rare during the bountiful days when most *rancheros* did not trouble to cultivate the land, and raised cattle solely for hides and tallow. Santa Anita became a showplace in the early 1840's, and Reid hospitality was proverbial.

Being a literary man with a library unique in California, Don Hugo attracted many writers to his home. A frequent visitor was Alfred Robinson, author of the perennially popular "Life in California." Don Alfredo enjoyed the family life of "old Reid," his gracious wife, his daughter known as "the flower of San Gabriel," and three manly handsome sons. He wrote of the homesite:

"It is one of the fairy spots to be met with so often in California. On the declivity of a hill is erected a *molino* or grist-mill, surrounded with fruit trees and flowers. A beautiful lake lies calm and unruffled in front, and all around fresh streams are gushing from the earth, and scattering their waters in every direction."

William Heath Davis was another interpreter of the early scene who experienced Reid hospitality in its heyday, and recorded his impressions:

"During our stay as guests at Santa Anita (for two months preceding Christmas, 1844) we feasted daily on good food. For breakfast we had honey (the production of the land, and in fact everything we ate was), fresh eggs from the poultry yard, which was well-stocked with chickens, ducks, geese, and turkeys; coffee with rich cream; chocolate and tea; 'chino beans' (curly beans) which looked like scrambled eggs, especially for breakfast; *tortillas* made of flour or corn. . . . This composed the first meal of the day. The cloth was neat and the furniture of the table was exquisitely clean.

"As the house clock sounded the noon hour, visitors were summoned by the maid

servant to the dining-room for a midday meal, a solid meal (here Davis inserts mouth-watering recipes, mentioning home made bread and wine) . . . This noon repast," says he, "could not be excelled in respect to neatness and in preparation of the food."

The evening meal Davis also described (in a manuscript preserved at the Huntington Library) concluding: "This fine dinner was served with old wine of the make of the Mission of San Gabriel, and custard, and pies, and coffee. . . .

"Both Reid and his wife are epicures, and they had everything (their own market place on the *hacienda*) to entertain visitors sumptuously. Doña Victoria (the customary bestowing of this title on the Indian woman showed that her husband could by no one be regarded as a 'squaw man')—Doña Victoria had a fine Indian cook who had been educated in the art at the Mission of San Gabriel, though the lady herself superintended more or less in the preparation of our good living. . . . A Castilian lady of standing could not have bestowed on us any greater attention or graciousness."

The husband and wife Davis described as "living very happily together." In a final comment on the housekeeping of Doña Victoria the visitor said, "beds which were furnished us to sleep upon were exquisitely neat, with coverlids of satin, the sheets and pillow cases trimmed with lace and highly ornamented."

In his well-known "Seventy-five Years in California," Davis claimed that Santa Anita at the time of his extended visit was "the most picturesque spot of Southern California, with mountains, valleys, springs and running silvery streams. You would observe in riding over the rancho, its having more than its *pro rata* of towering and over-spreading liveoak trees, manzanita, laurel, and other forest in comparison with other *ranchos*."

(To be continued)

SCRATCHBOARD PLANT SKETCHES

ALFRED C. HOTTES

Silverleaf; Cenizo: *Leucophyllum texanum* is a Mexican shrub growing 8 feet tall. The flowers are a violet-purple, bell-shaped, with a 5-lobed limb, axillary, 1 inch across, with 4 stamens. The leaves are silvery tomentose, alternate, entire, obovate, to 1 inch long. The shrubs make excellent hedges in un-irrigated gardens, or they may be grown as specimen flowering shrubs. The plants stand considerable drought and therefore do well in the interior valleys of California, in the southern areas especially.
Family: Scrophulariaceae
Familiar relation: snapdragons
Name: means "white leaf;" pronounced lew-ko-fil-um.

Above: general view; gauge height in centimeters; left to right, 100 cm.; 50 cm.; 30 cm.; 7.5 cm. Right: detail of dew gauge and supporting frame.

Arboretum Dew Gauge Station No. 1

THE DUVDEVANI DEW-GAUGE

R. J. SEIBERT

WHEN man first started to think and ponder about the natural phenomena around him, dew, no doubt, incited his curiosity. Depending upon his mood, he either avoided its cold early morning touch, or playfully kicked it off some clump of grass to clean his dirty feet.

Dew, and its effect on plants has been theorized by many and is thought to be a major source of water supply for certain vegetation such as the Tillandsias on the barren rock in certain portions of the Peruvian desert. Certainly Bromeliads, and Lichens growing on pure rock in rainless areas, must have to obtain their moisture from the atmosphere and from dew. This fact may be borne out by both morphological and anatomical evidence. Dew

and atmospheric moisture must be responsible for the rather luxuriant "belly plant" growth found on certain rainless areas of the Peruvian desert during the fog season of each year.

Until recently, it appears, no reliable means of recording amounts of dew precipitation had been satisfactorily devised. With neither quantitative nor qualitative dew data available little competent research regarding dew and its effect on plants could be undertaken.

For several years the Government of Israel has maintained a Dew Research Station at Karkar, Israel, under the direction of S. Duvdevani.

Duvdevani has been able to develop the first practical means of recording amounts of dew precipitation as well as certain other related data bearing on the subject of dew formation.

Essentially the equipment for recording dew consists of a specially treated block of wood, upon which dew formation may be observed through a series of water patterns. These various patterns may be compared with a series of photographed standard patterns, each of which is numbered, each pattern having a plus and minus value which permits the recording of all stages of intergradation between the major pattern divisions. Patterns formed by a mixture of both dew and rain, or rain alone, are easily distinguished from those of dew alone. The recording consisting of reference numbers and letters may then be translated into actual fractions of millimeters of dew precipitation each night. Recordings are made at sunup or very shortly thereafter, before evaporation shall have taken place.

A series of about four dew gauges ranging from ground level to one meter above ground provides with relative accuracy, and comparison between wet and dry seasons, the basic dew formation and precipitation for a key spot under observation.

The dew gauge serves a function which the rain gauge has never touched, since amounts of dew precipitation provide insufficient water to flow into a rain gauge where it, in turn, could be recorded.

For those who may be further interested: the Duvdevani Dew-Gauge and related equipment, as well as complete instructions and pertinent literature, is now commercially available through C. F. Casella & Co., Ltd., Regent House, Fitzroy Square, London, W.I., England.

As a result of his basic development and research on dew, Mr. Duvdevani was invited to Earhart Laboratory at Cal-Tech to carry on a year's research on dew and its effect on plants under controlled laboratory conditions. In collaboration with his project, the Arboretum's research department under Louis B. Martin, has installed the first dew-recording station in the United States, with Dewey E. Nelson as observer.

Although natural plant species of Israel are different from those in this country, there are many similarities in types of vegetation, as well as in climatic conditions, particularly in the southern California area. Therefore it is of significance that S. Duvdevani may further his investigation in our area where dew may be a very telling factor in the growth of our natural vegetation. His findings most certainly will be of considerable interest to all concerned, especially to those whose work deals primarily with plant material of semi-arid regions of the world.

LIBRARY ACQUISITIONS

O special interest to the Arboretum is the gift of 12 additional volumes of photostat references on the *Begoniaceae*, from Mrs. Helen Krauss, Wynnewood, Pennsylvania. Mrs. Krauss sent 26 such volumes prior to this, last year. The gift as a whole is of singular importance, since the original references are largely from rare book reference material available only in major library collections either in this country or abroad; consequently, they are accessible only to comparatively few scholars. Students of the nomenclature, taxonomy, and bibliography of begonias will now find in *Lasca* Library a small treasure of orginal source material on this subject.

* * *

Four original paintings were added to the Charles Broughton collection of botanical and horticultural studies, as a gift from Mrs. Mira C. Saunders, to whom with her late husband, Charles Francis Saunders, the paintings were first presented by the artist. They are exceptionally faithful portrayals of the plants, both in color and form. We are proud to have also ten of Mr. Saunders' own books in *Lasca* Library, presented in earlier years by Mrs. Saunders, because they are now out of print, and considered Californiana collectors' items.

WEATHER RECORD—1952

Los Angeles State and County Arboretum, Arcadia, California

J. T. McGah

1952	TEMPERATURE AVERAGE		TEMPERATURE PEAKS		RAINFALL INCHES	PAN EVAPORATION INCHES
MONTH	MIN.	MAX.	MIN.	MAX.	MEAN	MONTH	MONTH
January	37.5	63.6	28.0	78.0	50.5	13.350	0.920
February	39.3	69.5	31.0	83.0	54.4	.825	1.610
March	38.5	64.8	31.0	86.0	51.6	7.875	1.775
April	44.5	72.2	38.0	92.0	58.3	2.960	1.735
May	49.3	85.1	40.0	92.0	67.2	———	4.690
June	50.5	81.2	44.0	100.0	65.9	.010	4.915
July	55.3	94.5	48.0	105.0	74.9	———	5.700
August	57.0	95.4	51.0	104.0	76.2	———	6.045
September	56.6	95.7	45.0	105.0	76.1	.210	5.355
October	49.1	84.4	43.0	99.0	66.7	———	3.500
November	42.6	70.2	34.0	88.0	56.4	4.670	1.605
December	39.8	66.1	33.0	86.0	53.0	4.380	0.930
					Total inches—	34.230	38.780

Highest temperature of 105°F. was recorded on three days: July 27th, Sept. 5th and 7th. On 94 days a temperature of 90°F. or over was recorded including 15 days when the temperature went above 100°F.

Lowest temperature of 28°F. was recorded on the nights of January 2nd, 3rd and 4th. On 104 nights a temperature of 40°F. or lower was recorded including 12 nights when the temperature was below 32°F.

Noticeable smog was recorded on 67 days, being unusually intense during the months of May, September and October. From October 20th to October 29th, inclusive, ten consecutive days of smog was recorded.

The months of May through October were hot and dry with an evaporation loss of 31.205 inches. During these dry months only .22 inches of rain was recorded.

Rain was recorded on 59 days. The heaviest precipitation was in January when 13.35 inches fell. During the storm from January 15th through 18th 9.43 inches was recorded. 5.60 inches of this fell in 24 hours between 4 p.m. January 15th and 4 p.m. January 16th, 1952.

WEATHER RECORD—1952

University of California, Los Angeles
Subtropical Horticulture Area

1952	TEMPERATURE AVERAGE		TEMPERATURE PEAKS		PRECIPITATION TOTAL
	MIN.	MAX.	MIN.	MAX.	MONTH
January	42.9	63.1	34	82	11.61
February	42.4	63.8	34	77	0.03
March	43.4	64.3	35	84	9.00
April	48.3	68.1	43	82	1.86
May	53.0	72.1	48	78	0.00
June	52.7	72.8	46	84	0.00
July	57.1	79.4	51	88	0.00
August	58.3	83.2	54	93	0.00
September	52.8	80.1	48	92	0.20
October	51.6	73.7	45	90	0.00
November	43.9	64.1	37	75	3.38
December	43.5	65.7	35	82	4.29
				Total inches	30.37

COMPARISON BETWEEN THE FLORA OF ISRAEL and SOUTHERN CALIFORNIA

F. W. WENT

THE climate of Israel, Spain and other Mediterranean countries resembles that of southern California in many respects, and consequently we find that many parallels exist between the vegetation of southern California and the Mediterranean areas. In both regions, rain-fall is deficient, particularly during summer, and in both cases we find cool, fairly wet winters. There is, however, one outstanding difference between these regions: whereas, geologically speaking, the climate of southern California has become dry in rather recent times, the Mediterranean and surrounding regions have been arid for many millions of years. Consequently, we find a large number of parallels and a number of differences between the vegetation in these two areas. In both cases, the plant cover of the coastal areas is the chapparal or Mediterranean shrub vegetation. In southern California some of the main components of chapparal are oaks, members of the rose family, sages and a few relatives of the blueberry, such as manzanita and Arbutus; in the Mediterranean areas, the main types are oak, pine, sages and leguminous shrubs, with also Arbutus. In the drier regions a typical desert vegetation is found, both in Israel and in southern California, which in general appearance look very much alike. In California, ironwood, palo verde, and the smoke tree are found in washes in the drier areas; whereas in Israel, acacias and tamarix grow in similar spots. Smaller perennials are abundant in number of species but poor in number of specimens in both places. And finally, we find in both deserts innumerable annuals after the proper rain. In the Israel desert, we find, in addition, a group of plants which are not found in southern California. These are the plants which are able to grow in strong salt concentrations and which are found along the shores of the Red Sea and the Dead Sea. Apparently the youth of the California desert has prevented the development of extreme types of salt plants. All of our plants of saline habitats come from coastal marshes.

Some of the most prominent desert plants in southern California have originated in Chilean deserts, which are much older than ours, for example, the mesquite and creosote bush. Here in southern California, we find a gradual change over from the chapparal to the desert flora. As we get into drier areas, fewer plants from the chapparal can be found and gradually more typical desert plants appear. There are only very few typical steppe plants in southern California. Our most typical steppe plant, the sage brush of Nevada, is closely related to Artemisia from the chapparal and therefore cannot be considered as a new floristic element.

In Israel, however, the situation is very different when travelling from the coastal Mediterranean area southward. The Mediterranean shrub vegetation gradually becomes replaced by a steppe vegetation which differs fundamentally from both the Mediterranean and the desert vegetation. This is the so-called Irano-turanian flora. Only after having passed the broad belt of this new floristic element does one encounter typical desert vegetation. This Irano-turanian vegetation has its origin in the semi-arid regions of Persia and Turkistan where for millions of years the same general climate allowed the development of a very special steppe type of vegetation. Many of our most valuable cultivated plants, such as wheat and other cereals, peas, etc., belong to this Irano-turanian flora and thus we see many of the ancestors of our cultivated plants growing in Israel in the vegetation belt between the coast and the desert. Other plants like the *oncocyclus* iris, tulip, and gladiolus grow in the same area. Thus the traveler in Israel does not only gather the impression that all the time he is treading ground hallowed by human history, but the botanist also feels that he is seeing an area that

is the cradle of so many of our cultivated plants.

Professor Zohary, the head of the Botany Department of the Hebrew University in Jerusalem, pointed out some other very interesting facts about the Irano-turanian flora. Whereas, normally we look at seeds as a method of dispersal of plants, he pointed out that plants might be better off if they did not try to disperse their seeds over a large area. After all, the successful growth of a plant in a particular spot indicates that it has found its proper growing conditions. Why should a plant scatter its seeds all around instead of re-establishing itself in the same place? Actually Professor Zohary showed that a large number of the plants from the Irano-turanian flora have adaptations to keep part of their seeds near the mother plant. There are mechanisms such as having some of the flowers develop under ground, which causes the seeds to remain below the surface in the plant where the original plant grows. Or, in other plants like some of the clovers and the peanut, the young fruit is driven into the ground where the seeds ripen. Or, the seed pods remain attached to the plant instead of dropping off and being dispersed.

When we look around in southern California we find that only a few plants have developed such special mechanisms, reducing the dissemination of seeds. One of the most typical examples is *Oenothera decorticans* in which the seed pods become so hard and woody that many of the seeds remain enclosed in them.

It seems that there is a causal relationship between the lack of dispersal of seeds from Irano-turanian plants and their importance as food plants. Only plants of which the seeds do not scatter upon harvesting of the ripe plant can be made into crop plants. When plants are harvested, the seeds should remain attached until threshing. This is actually the case in many of the Irano-turanian plants, and thus it is easy to collect seeds; whereas, in many of our wild desert plants, the seeds are scattered immediately upon ripening and therefore are hard to collect. In the Irano-turanian plants, seeds can be collected by picking dry plants and putting them in bags. Since the seeds are so large and do not fall off anyway, even paper bags full of holes can be used for their collection. However in desert plants, we need paper bags without any holes if we want to keep our seeds.

CALENDAR

American Begonia Society, Glendale Branch, meets the 4th Wednesday of each month, at the Tuesday Afternoon Club House, 400 North Central Ave., Glendale. 7:45 p.m. The following dates should be noted:

June: Mr. Alfred Roberts, speaking on *Ferns*

July: Mr. Ladislaus Cutak, speaking on *Tropical Foliage Plants.*

August: Mrs. Carolyn K. Rector, speaking on *African Violets.*

Sept.: Mrs. Louise Schwerdtfeger, speaking on *Begonias for Hanging Baskets.*

Visitors are welcome. Plant tables. Social time.

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American Begonia Society, San Gabriel Branch: meets the 4th Wednesday of each month, at Masonic Temple, 506 South Santa Anita, Arcadia. 8 p.m.

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Bulb Society: second Wednesday of the month at Pasadena Women's Clubhouse, 58 South Sierra Madre Ave., Pasadena. 8 p.m.

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Cactus and Succulent Society of America, Inc.— Fifth Bi-ennial Convention at Arcadia, Calif., from July 10 to 12, will be followed by three days of bus trips. Arcadia is at the foot of the mountains about fifteen miles northeast of the center of Los Angeles on U.S. Highway 66. Formal meetings will be held in the private dining room of Carpenter's Cafe. Lodgings for a major portion of the delegates will be in luxurious motels convenient to Carpenter's. The Convention Committee must arrange for lodgings, meals and bus trips in advance. For further information about reservations get in touch with Homer Rush, 820 West 115th St., Los Angeles 44, Calif.

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Orchid Hobbyists, San Gabriel Valley: meets the 3rd Thursday of the month, at Michillinda Women's Club, 736 South Rosemead Blvd., Pasadena. 8 p.m.

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Pacific Rose Society: Picnic meetings planned from May to October at various locations, by announcement. Watch the local newspapers.

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Southern California Camellia Society: no meetings, May-October, inclusive.

NAMES, NOTES AND NEWS

Little Garden Club of Pasadena becomes the first Group Life Member of California Arboretum Foundation.

We wish to quote from a letter from Mrs. Alan F. King, President of the Little Garden Club of Pasadena, regarding the inspirational way in which this club, with relatively few members raised the funds for their life membership:

"For the past two years the Little Garden Club of Pasadena has had as its project the achievement of a life membership in the Los Angeles State and County Arboretum. Just this month (i.e. March 1953) sufficient funds have been accumulated to accomplish this goal.

"You may be interested to know that this amount represents 'earnings' of our members rather than direct donations. The initial contributions to the fund was the residue from a previous club project which was the printing and sale of a garden calendar. To this was added little by little the contributions of individual members as each was collected. Each member was responsible for her own personal project. These covered a wide variety of activities: making and sale of card-table covers; woodcraft products; barbecue accessories; Christmas wreaths; sale of garden supplies on commission; donation of services for a club program; and several others not so easily catalogued."

To the Little Garden Club of Pasadena, a heartfelt life welcome to California Arboretum Foundation.

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Rancho Santa Ana Botanic Garden. Claremont, California. Open to visitors, as of April 1, 1953. This botanic garden, founded in 1927, was originally located in the Santa Ana River Canyon in Orange County. There it was visited by many thousands each spring. It specializes in native plants of California and has exhibited each spring many hundreds of the California wild flowers and flowering shrubs, such as *Ceanothus*, or California Lilac; Manzanitas, Tree Poppies, Matilija Poppies, *Fremontia* or Slippery Elm; and *Cercis* or Red-bud. Having moved to a new site at Claremont the botanic garden has been closed for the past two years to public visitors, while new plantings were being installed.

The Garden is scheduled to be open daily except Saturday afternoon and Sunday from 10 a.m. to 4 p.m. During the spring it is open also on Saturday afternoons. Admission is without charge and visitors are welcome without having made previous arrangements or reservations, which used to be required. A further change in procedure from that formerly in vogue is that no picnic grounds are provided, since nearby city and county parks are available. It is suggested that groups like classes and garden clubs make previous contact with the Director of the Garden if they wish a member of the staff to be available for conducted walks.

At the Orange County site it was customary to have a flower show in the assembly hall with an afternoon talk. Since the new area is compact and easy to walk about in, and since the growing plants are labelled, visitors can see the plants as living things and no indoor show will be held. Consultation with a member of the staff on the grounds is possible for those who have questions as to use of native plants for their home gardens, where these can be obtained and how to handle them.

It takes some years to develop a mature garden. Shrubs and trees are necessarily, therefore, small as yet, but there is enough development to make a visit worth while for those specifically interested in California's rich and diverse flora—one of the most beautiful and colorful in the world. The best time to see this flora in bloom is during the spring months.

The Botanic Garden's new site is about one-eighth mile north of Foothill Boulevard (Highway 66), at 1500 North College Avenue, Claremont.

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Lasca Visitors: Dr. J. Lanjouw, Professor of Botany, University of Utrecht, Netherlands, and Secretary-treasurer of the International Association for Plant Taxonomy and Nomenclature. A specialist on the vegetation of Surinam, Dr. Lanjouw is on a tour of botanical institutions of the United States and Canada, prior to another expedition to Surinam.

Dr. Ivan Johnston, Arnold Arboretum, Jamaica Plain, Massachusetts.

Dr. John B. Carpenter, Pathologist, U.S.D.A. Rubber Station, Turrialba, Costa Rica.

Dr. Robert D. Rands, former Head of the Division of Rubber Plant Investigation, Plant Industry Station, Beltsville, Maryland.

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Cactus and Succulent Society of America will convene in Arcadia for its convention in July this year. Among the many noted members will be Ladislaus Cutak, Horticulturist in Charge of Conservatories at the Missouri Botanical Garden in St. Louis. (See p. 53.)

Of special interest to our readers is the engagement of Mr. Cutak as speaker at the July 16th meeting of the Southern California Horticultural Institute. Mr. Cutak has made a number of plant collecting trips through Mexico, is an excellent photographer, and an expert on both the taxonomy and culture of cacti, succulents, and bromeliads.

Mr. Cutak's calendar in southern California also includes his speaking on "Tropical Foliage Plants," at the July meeting of the American Begonia Society, the 4th Wednesday of the month. [See *Calendar* column in these pages].

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Arbor Day at the Arboretum: On March 7, District 2A of California Garden Clubs, Inc., Mrs. Hal Baldwin, Director and Mrs. William Shearer, Chairman, sponsored an Arbor Day celebration on the grounds of Los Angeles

State ond County Arboretum. Funds for the purchase of twelve magnolia trees representing ten species and varieties, were contributed by the following clubs whose representatives were present for the planting ceremonies:

Cheviot Hills Garden Club; Garden Study Club; Southern California Horticultural Institute; Home Garden Club; Las Jardineras; Los Angeles Garden Club; Northwest Garden Club; Pacific Palisades Garden Club; Garden Section of Hollywood Woman's Club; District 2B, California Garden Clubs, Inc.; Garden Planners; Little Garden Club of Pasadena; plus an individual contribution by Mrs. Harry Bauer.

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California Historical Society meets at the Arboretum: On May 23, some hundred and fifty members of the California Historical Society met on the historic site of Rancho Santa Anita, located in the Historical Preserve of the Los Angeles State and County Arboretum in Arcadia. Preview of the newly restored "Lucky" Baldwin Queen Anne Cottage, an achievement of the Historical Committee of The Arboretum Foundation, under the direction of Maurice Block, highlighted the meeting.

BOOKS: REVIEWS and COMMENTS

The Years in My Herb Garden—Helen M. Fox, author of Gardening with Herbs for Flavor and Fragrance, Patio Gardens, Abbé David's Diary (French translation), etc. The Macmillan Co., N.Y., 1953. 185 pp. Index. $3.95.

In this, her latest book, "The Years in My Herb Garden," Helen M. Fox has woven a tapestry of delight. For thirty years she has lived intimately with herbs and all this time, she tells us, she has grown them, cooked with them, arranged them in vases for the indoors, written and read about them. As we read her book we feel that she has captured and set down not only their form, color and texture but also that elusive quality, their fragrance. History and folklore together with direction for their propagation and care are deftly included—"with a dash of botany to sharpen the descriptions." Her lively enthusiasm and the engaging charm of her personality meet us on every page and as the chapters unfold we long to grow under her guidance the mints, savories, thymes, lavenders, rosemary, rue and parsley, as well as the relatives and associates of this most enjoyable company of plants. We learn from Mrs. Fox furthermore that it is quite appropriate to brighten the herb garden with hollyhocks, peonies, columbines, marigolds, nasturtiums, pinks, primroses, violets and old-fashioned roses, since in one way or another they all have herbal virtues and traditions.

Her chapter "Thymes and Other Ground Covers" is especially suggestive to us in southern California where lawns are a problem. Among the best of the herb ground covers recommended by her are the various forms of the low-growing *Thymus serpyllum* or mother-of-thyme; planted in bare spots in the lawn, they will form increasingly large patches of deep green that may be mowed together with the lawn, and stepping-stones with some of these lower herbs between them make a fragrant path. Other ground covers discussed by her are chamomile, sweet woodruff, violets, ajuga, periwinkle, and strawberries.

A generous section of the book is devoted to alliums—one chapter, in fact, entitled *Ornamental Onions*—and we find that besides the onions of our vegetable gardens, the leeks, garlic and chives, there is a host of desirable ornamental alliums native to the mountainous regions of California, Persia, and Central Asia. These come readily from seed and the umbellate flowers range in color through white, rose, lavender, blue, and yellow. A collection of them distributed in the herb garden will provide continuous bloom from June to September, we are told; in California the blooming time would be longer. Among the many named varieties described, Mrs. Fox considers the lavender-tinted roseate *Allium platycaule* from Lower Califorina one of the loveliest.

The fragrance of herbs is unique in that it pervades the whole plant—to be released at a touch. Mrs. Fox relates that she remembered long after experiencing it the exceedingly flower-like quality—without any pepper in it—given forth by the wild thyme when she stepped upon it while climbing the stony, steep mule paths in Taormina, Sicily. This almost magic power of herbs to hold and recall old memories makes herb gardens particularly grateful to the blind. Included in this book is the design of the John J. Tyler Arboretum at Lima, Pennsylvania, one of a number of herb gardens throughout the country which have been planned especially for the blind.

Early native American herbs used by the Indians and settlers in colonial times are discussed; decorative herbs for the perennial border, and shrubs and trees in keeping with the herb garden, receive due attention. One entire chapter is devoted to roses for background purposes. Illustrations of exceptional clearness and detail of various individual plants, and of Mrs. Fox's own two famous gardens—her earlier one, "Foxden," and her present garden "High and Low" in southeastern New York state—all add immeasurably to one's pleasure and interest in the book. In addition, a number of herb garden designs are included, as well as recipes for culinary experiment, and directions for making sweet bags and *pot pourri*, the latter contributed by Mrs. Arthur D. Richardson, Altadena, California, and Mrs. Mary E. Baer, Clayton, Missouri.

MIRA C. SAUNDERS

• • •

Arnold-Forster, W., *Shrubs for the Milder Counties*. London. 1948.

Lord, Ernest E., *Shrubs and Trees for Austral-*

ian Gardens. Melbourne. 1948.
Hoyt, Roland S., *Check Lists of the Ornamental Plants of Subtropical Regions.* Los Angeles. 1938.

Horticultural information on plants for subtropical areas is obtained from many diverse sources. We in Southern California are fortunate in having three books recently published for other parts of the world which are also equally of interest and usefulness here and are a good supplement to the well-known volume by Hoyt, one by Sima Eliovson (see p. 38), the other two noted above.

The home gardener might easily pass by books on plants for South African or Australian gardens and casually wonder where the "milder countries" are without realizing what excellent plant information can be obtained from these books. All three volumes noted above list plants for exposed sea coast or windy locations including many which we grow in Southern California and others which we might try. Descriptions of the plants in cultivation, notes on their various horticultural uses, methods of propagation, suggestions on soils, pruning, etc., all are of interest and use to the subtropical gardener, whether he live in South Africa, Australia, Cornwall or Southern California. The three volumes are well illustrated with photographs in black and white and color.

MILDRED MATHIAS

• • •

Understanding the Weather: A Revision of *Knowing the Weather.* T. Morris Longstreth. Macmillan Company. N.Y. 1953. 118 pp. Index. $2.50.

Through the courtesy of The Macmillan Company a copy of this weatherbook by an able scholar of the subject has been added to the Arboretum Library. We are pleased to present the following quoted review from Macmillan Company: (in major part).

"*Understanding the Weather* (a complete revision of *Knowing the Weather*) involves developments which have taken place within the past ten years and is a culmination of the author's lifetime interest, his first book on the subject having appeared in 1915. Mr. Longstreth declares that he believes his book prepares the general reader for whatver developments may lie ahead by giving the fundamentals of weather in the simplest form so that he can understand 'what the claims of the rainmakers are all about.'

"Weather is self-evident," Mr. Longstreth writes, "but man has trained his eyes not to see. Before he donned the dark glasses of urban life and ended in the subway, man read the sky fairly well. The Indian, the sailor, the herder, and even the housewife hanging out the clothes to dry understood the signs of weather that threatened their occupations. To them clouds practically talked. The wind is the skeleton of the future; but clouds are its flesh, living, sensitive to every variation of temperature, air moisture, wind or current, and they write out what is to come for all to see. If there is anything that is open and aboveboard, it is the atmosphere.

"*Understanding the Weather* contains chapters on cyclones, winds, clouds, fog, rain (old style), rain (man-induced), thunderstorms, hurricanes, tornadoes, snow. There are weather maps and a section devoted to forecasting with regard for the amateur. There is a bibliography as well as a glossary of technical terms."

• • •

In the last issue of *Lasca Leaves, The Aloes of South Africa* by Gilbert Westacott Reynolds was mentioned in this column as a valuable treatise on the subject. From the standpoint of the casual student, the book's significance and limitations are here noted by Alfred C. Hottes of our editorial board, as supplement to the prior comment. Mr. Hottes cryptically remarks: "I got little from the book but pleasure":

"This monumental task of classifying the 132 species of Aloes of South Africa has been well accomplished by Reynolds and the book will be of use to those who have at hand the numerous specimens which they would like to idenify. But to one who has delved only to the surface as the present reviewer has done, it is of less help. For example, I was unable to determine the true name of what we call *Aloe Salm-Dyckiana*, for this is apparently not a good name. The lack of keys prevented the identifying of a number of specimens which I have in my garden. The author tells us that there are many natural hybrids, also many forms which vary greatly from one location to another; as well as numerous species similar enough to confuse the expert. The species range in size from *A. Saundersae*, only six inches tall, to *A. Bainesii* which grows fifty feet tall. Some of the species are pure white, some yellow, but most of them are scarlet, as far as the blossoming is concerned."

As an added note, Mr. Hottes reminds us that Bailey recommends the pronunciation of the word *aloe* with three syllables as a botanical name—i.e. *al'-o-ee;* but with two syllables as a common name—*al'-o.*

• • •

California's Arboretums and Botanical Gardens —Elizabeth McClintock. California Academy of Sciences, San Francisco. Reprinted from *Journal of the California Horticultural Society*, Vol. 14. Nos. 1 and 2, Jan. and April 1953, respectively. This is an excellent brief survey of such institutions as are established in California. Significant points about each, their directors, their particular botanical collections and horticultural offerings, their location and geographical advantages are adequately covered. The information should prove helpful to both visitor and student, as a guide and reference to his special botanical or horticultural interest. For information about availability of copies of this reprint, write to the author, Department of Botany, Academy of Sciences, San Francisco, Calif.

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The official publication of the Southern California Horticultural Institute
and the California Arboretum Foundation, Inc.

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JANET WRIGHT, *Editor*

VOL. III OCTOBER, 1953 No. 4

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Fullugia paradoxa, Apache Plume

WHITE FLOWERING NATIVE CALIFORNIA PLANTS FOR GARDEN USE

KATHERINE K. MULLER

WHITE FLOWERS are widely used as accents in garden plantings, while charming effects are created in the occasional all white garden. For those who intend to use white flowers in their garden plan and who look for something a bit unusual in plant material, there are several native California species well worth consideration. Since variations in blooming time make it impossible to see all of these plants in flower at the same time, it seems useful to review some which have proved interesting to visitors at the Santa Barbara Botanic Garden. Some of these have already been accepted in the horticultural trade and are readily available at most nurseries. Others, just as desirable, have not yet been generally tested. Varying in habit from ground cover to tree, there is at least one of these white flowering native species suitable for almost any garden situation. Not all of them are easily grown. Those to be dealt with here, however, should offer no horticultural problems to the gardener.

Fragaria chiloensis, Sand Strawberry, is already known as a desirable ground cover plant. Covered with a mass of white flowers in the spring, it is attractive throughout the year because of its rich green leaves. Although it is widely publicized as a ground cover for areas of considerable size, one of its most attractive uses is in a narrow border not more than a foot in width along garden paths and flower beds. It thrives under normal garden conditions and is well adapted for use in combination with the more common garden plants.

Gilia nuttallii var. *floribunda* is a plant of great potential use in the spring garden although it is not widely known. This small perennial forms a dense rounded mass of herbage 10 to 12 inches high. It is an inconspicuous plant except when in bloom, but in late spring it bursts into a mass of white flowers 1 inch across which make it easily one of the showiest plants of the garden. So dense are the star-like flowers at the height of their bloom that the underlying plant structure can scarcely be seen. By summer the flowers are gone and the finely divided leaves beginning to brown. The plant is then ready to be cut back to await the next growing season. This is an ideal choice for a rock garden or for a low mixed flower border. It is easily grown and does well in a slightly sandy soil, often seeding itself when once established.

Little attention has been given to the white flowered species of *Oenothera* as subjects for garden culture, although the pink and yellow flowering species are often cultivated. *Oenothera deltoides* is an annual with branches which spread out in cartwheel fashion from the base of the stem. By the middle of spring the large 4-petalled flowers, up to 3 inches across, begin to open and continue into summer. This Dune Primrose is easily grown under almost any garden conditions and is capable of naturalizing itself and coming up year after year in undisturbed locations. Of the perennial white flowering oenotheras, *Oenothera caespitosa* var. *marginata* is especially to be mentioned. It is a compact plant with long lobed leaves and large fragrant flowers which open towards evening. In Santa Barbara it has been found especially useful in borders and on rocky banks.

Romneya coulteri, Matilija Poppy, is well known to gardeners, having been cultivated for many years. Its large fragrant white flowers with their big orange-yellow centers are its most attractive feature. Blooming in June and July it reaches its heaviest flowering at a time when the garden is apt to be in a state of summer dullness. This is a tall-growing perennial which should be cut back near the ground after flowering. It is best used in a large

Carpenteria californica in Santa Barbara Botanic Garden

space as it tends to spread by root sprouts and is not readily confined to a small location. Smaller strains of this species which fit more readily into the average garden are sometimes available.

Carpenteria californica is a beautiful native plant which has found its way into limited cultivation both in this country and abroad. It is a densely branching shrub growing to a height of 6 or 8 feet with simple oblong leaves which are dark green on the upper surface and grey beneath. It blooms for a period of about 6 weeks in the late spring with white flowers somewhat resembling those of *Philadelphus*. The flowers have 5 white petals around a mass of pale yellow stamens and reach a diameter of 2 to 3 inches. Near the coast *Carpenteria* grows well in full sun, but inland it is better to plant it in filtered sunlight. Although it is a drought enduring shrub, the leaves remain more attractive when it is given summer water.

From the arid southwest come two white flowering shrubs of the Rose Family which are especially good in hot dry locations. *Fallugia paradoxa,* Apache Plume, is a diffusely branching shrub with small finely divided grey-green leaves. In flower it is a handsome plant for it is covered with short flower stalks which project beyond the foliage, each bearing a showy white flower resembling a small single rose. From each flower there develops a cluster of small dry fruits with long tufted soft pink plumes, making a feathery ball up to 3 inches in diameter. The flowering season starts in May and continues until September with a gradual transition from full flower to full fruit. Apache Plume is readily grown in cultivation and is especially suited to dry banks and hillsides.

Cowania stansburiana, Cliff Rose, is somewhat similar to *Fallugia paradoxa* but in many ways more attractive. It is a shrub or rarely a small tree with several slender erect trunks and small leaves in dense clusters on dwarf side branches. In the heat of the day or when crushed, the glandular leaves give off a pleasant resin-

ous odor. The slightly fragrant flowers, borne along the branches, are creamy white with a center of pale yellow stamens and stand out clearly against the rich green of the clustered leaves. Cream colored or pale yellow flowered variations occur and some selection is required to insure a good white flower. From each flower there develops a group of 5 or 6 achenes, each with a thickly tufted plume. *Cowania* is a vigorous grower, can be pruned as desired, and requires a minimum of summer water. It is best planted in full sun along the coast.

Lyonothamnus floribundus var. *asplenifolius,* Santa Cruz Island Ironwood, is distinctive not only for its huge inflorescences of small white flowers, but also for its fern-like leaves and shaggy grey bark. This tree from the Channel Islands of California usually grows with an erect trunk to a height of 18 to 30 feet, but may branch at the base to produce three or four more slender stems while in moist canyons on Santa Cruz Island it reaches 45 feet in height. It is evergreen with pinnately divided leathery leaves. The small flowers, produced in broad branching panicles up to 18 inches across, are so densely massed that the big white clusters make a striking display when the tree blooms in early summer. Although summer is its blooming season, occasional inflorescences develop throughout the year in Santa Barbara. Santa Cruz Island Ironwood grows readily in cultivation and needs no particular type of care.

GROWING NOTES

GEORGE H. SPALDING

Cyphomandra betacea

This interesting plant of the nightshade family (*Solanaceae*) is one of the edible members, and is quite decorative as well. It will make a tall shrub or, if kept trimmed up, a small tree to twelve or fourteen feet. The flowers are white, in clusters, and the fruit roughly elliptical, to about three inches long. Green at first, it turns deep red, often purple striped; it is commonly called "tree tomato."

These plants were received in the spring of 1950 and planted out on the grounds in the fall of the same year. Although considered tender they have survived in the open ground for the past three winters. Some freeze back was observed but the plants make a rapid come back when the weather warms up. One plant was lost last year due to self-girdling roots which brings up a point in good horticultural practices that deserve particular emphasis. *Never buy or use plant material which has become badly root bound in containers.* This holds true for the smallest size containers on up. The tree tomato, which died, was dug out and the roots examined very carefully. It was very apparent that the plant had become extremely root bound in a three inch pot and although new roots had formed when shifted to a larger container, the curled roots formed in the small pot had formed a knot which eventually strangled the tree.

To return to our subject, the fruit of *Cyphomandra betacea* is sub-acid in flavor and can be eaten in the fresh state. However, it is much better in the form of preserves.

No special care is needed in growing except to remember that the plant is not reliably hardy and is especially tender when young.

AUTUMN CHANT

"Now the autumn shudders
In the rose's root.
Far and wide the ladders
Lean among the fruit.

"Now the autumn clambers
Up the trellised frame,
And the rose remembers
The dust from which it came.

"Brighter than the blossom
On the rose's bough
Sits the wizened, orange,
Bitter berry now:

"Beauty never slumbers;
All is in her name;
But the rose remembers
The dust from which it came."

EDNA ST. VINCENT MILLAY
The Harp Weaver and Other Poems

SOUTHERN CALIFORNIA HORTICULTURAL INSTITUTE 1952-1953

ANOTHER SUCCESSFUL YEAR in the history of the Southern California Horticultural Institute has come to a close, and high hopes are held for its future in the light of its past achievements.

One of the major accomplishments of the past year has been the development of a publication which reaches not only the membership of the Institute but an increasing number of people interested in the development of the Los Angeles State and County Arboretum—itself an accomplished objective of the Horticultural Institute. Formerly a publication solely of California Arboretum Foundation, Inc., the quarterly known as *Lasca Leaves* is now a joint periodical of the two institutions, as announced in the Spring, 1953, issue. Through the fine professional members of the Editorial Board, it gives expert, up-to-date articles and information, in addition to timely news of other arboretums and botanic gardens, which makes us realize that this new phase of communication is most valuable.

The month of March marked the Fourth California International Flower Show, held at Hollywood Park, Inglewood, Calif. It met with outstanding success. This flower show came into existence through the efforts of the Horticultural Institute. (See *Lasca Leaves*. Spring, 1953, issue. Vol. III, No. 2, p. 12.) During last season it achieved the reputation of being the major show of its kind in the United States—and we are really just getting started! When a spectacle of this kind is presented to 200,000 enthusiastic visitors from all parts of the world, as recorded this past year, it is bound to have far reaching effects.

These and other events of a successful past should be an incentive to further achievements in the future, which we confidently expect.

FRED W. ROEWEKAMP, *President.*

Report of Activities

Chairman of Monthly Meetings and Programs: Mr. Philip Chandler.

The following summarizes the programs held during the past year, at Toberman Playground Auditorium, 18th and Toberman, Los Angeles, the 3rd Thursday of each month:

September 18, 1952: *Tropical Plants for Southern California,* with particular emphasis on Bromeliads. Mr. Mulford B. Foster, famed plant explorer, of Orlando, Florida, outlined the culture of these plants and illustrated them with colored slides of specimens both in their native habitat and under cultivation.

October 16: *Hedges and Screen-material.* discussed by a panel of landscape authorities. Miss Peggy Sullivan served as moderator, assisted by Eric Armstrong, head landscape designer of Evans and Reeves Nurseries; Jay Gooch, landscape architect; Dudley Hickman, landscape designer.

November 20: *Trees for Southern California,* a talk by Leroy Chetwood of Keeline-Wilcox Nurseries.

December 18: *Christmas Color in California Gardens,* talk by Jay Gooch, Landscape Architect of West Los Angeles.

January 15: *The Fruit of Your Garden,* panel discussion led by Richard Westcott of Paul J. Howard Nursery, assisted by Dr. Walter Lammerts, and Mr. Dillon.

February 18: *Camellias, their culture and present day use in home and garden,* talk by Professor Claude Chidamian of U.S.C.

March 19: *Unusual Bulbs.* talk by James Giridlian, 1952 Editor, Bulb Society News.

April 16: *Roses, both old and new,*

panel discussion led by "Mirandy" (Mrs. Fred S. Bauersfeld), assisted by Dr. Walter Lammerts and John VanBarneveld.

May 21: *The Mixed Flower Garden,* panel discussion under leadership of Raymond Page, with Mrs. Mildred Davis and Howard Bodger assisting.

June 18: *Face-lifting the Garden,* talk and discussion by Ralph Cornell.

July 16: *Tropicals for the Sun,* talk by Ladislaus Cutak of the Missouri Botanical Gardens, St. Louis, generously illustrated with slides.

August 20: *Turf, its care and maintenance.* Report and discussion of new types of turf under consideration, and experimentation under scientific control, by panel consisting of: Gorden Wyckoff, Division of Floriculture and Ornamental Horticulture, U.C.L.A.; Marston H. Kimball, Ornamental Horticulturist, Agricultural Extension Service, Los Angeles; and William Beresford, L. A. Country Club.

Hearty participation in these programs gave evidence of the interest they aroused among the membership of the Institute, and speaks its own appreciation of the generous contribution of time and effort on the part of the speakers and panel assistants.

Plant Forums: Chairman, Dr. Mildred Mathias, Botany Dept., University of California at Los Angeles (U.C.L.A.). Report of previous plant forums is printed in the monthly notices. A file of plants exhibited is kept for reference.

Reception and Membership: Chairman, Mrs. Maria Wilkes, who with her committee is mainly responsible for the gratifying increase in membership.

Arboretum and Street Tree Planting: Chairman, Dr. Samuel Ayres, Jr. Progressive interest shown by civic-minded people of the city of Los Angeles and by members of the City Administration is due largely to Dr. Ayres' constant work on the street tree program for this area.

Income Tax Note to members and prospective members: A recent ruling dated July 6, 1953, from the U.S. Department of Internal Revenue discloses that beginning May 26, 1951, the date on which the Articles of Incorporation of Southern California Horticultural Institute were amended, exemption from income tax was provided in the code, since the Institute is organized and operated exclusively for educational and scientific purposes. Contributions made to the Institute, on or subsequent to May 26, 1951, are deductible in computing taxable net income in the manner and to the extent provided by the code. The Board of Directors is pleased to present notice of the above ruling in this Annual Report.

September marks the opening of a new year of activity of the Institute, with the following officers and committee chairmen:

President.....Fred W. Roewekamp
Vice-president.....V. T. Stoutemeyer
Secretary.....George H. Spalding
Treasurer.....Kenneth Bishop
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Membership.....Ronald B. Townsend
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Plant Procurement.....Mrs. Maria Wilkes
Plant Donations.....Mrs. Judith Packard
Publicity.....Howard Bodger
Endowment Fund.....Manfred Meyberg
Plant Forum.....Donald Woolley
Plant Forum Display.....John Waterbury
Pasadena Flower Show.....Kenneth Bishop
Lasca Leaves.....Philip Chandler, Mildred Mathias, Philip A. Munz
International Flower Show
For one year..Jack Evans, Lovell Swisher
For two years.....Fred W. Roewekamp, Earl Humphries, Francis Tomlinson

Respectfully submitted by
Ronald B. Townsend,
Executive Secretary

SOUTHERN CALIFORNIA HORTICULTURAL INSTITUTE, INC. FINANCIAL SUMMARY

July 1, 1952, to June 30, 1953

Total Income		
Membership:		
Associates	$ 37.50	
Annual	620.00	
Commercial	405.00	
		$1,062.50
Publications		4.00
International Flower Show		2,315.83
Plant Raffles		421.75
Total Cash Income		$3,804.08
Total Expenses		2,237.76
Total Fixed Assets		5,020.09

CALIFORNIA ARBORETUM FOUNDATION, INC.

Annual Membership Meeting
June 16, 1953
ANNUAL REPORT 1952-53

CONSTRUCTION:

County Capital Improvement work on the grounds this fiscal year has consisted of:

1. Grading, paving and preparation of the parking area adjoining the west side of Baldwin Avenue between Colorado Blvd., and the staff entrance, just north of the forecourt area; included are staff and service entrance gates.

2. Paving of the north loop road through the north acres and the Tallac Knoll road; this completes the major paving of Arboretum roads.

3. Installation of north loop water main and primary and main sewer spur lines along the future building area.

4. Installation of sprinkler systems in the parking area, the northeast nursery area and throughout the southeast section of the Arboretum, including a portion of the Historical Preserve.

5. Construction of an aluminum lath house on the permanent lath house site.

6. Drainage facilities were improved through the remodeling of the old 4 foot drain gate of the Lagoon into a spillway.

FORECOURT PARCEL:

The County has purchased some 3.6 acres of property which will form the main public entrance and forecourt off Baldwin Ave.

HORTICULTURAL PROGRAM:

Accessions of seeds and plants at the Arboretum totaled 1,746 individual items. As in past years many countries were represented and the accessions will add valuable material to our plant collections.

More than 3,500 plants were set in permanent positions on the grounds. This is more than double the number planted last year. Both our growing and planting program are accelerating and the permanent plantings are beginning to show the results.

The Arboretum Magnolia collection was considerably augmented by the gift of 13 plants in 11 species and varieties by various garden clubs as their Arbor Day project. Eighteen species and varieties are now represented in the Arboretum collection. Additional redwoods and metasequoias were planted near our established redwood to form a small grove.

Two large plantings of *Eucalyptus* were made in the Australian section of the grounds, and a sizeable planting of *Acacias* has been installed at the north end of the Baldwin Ave. parking lot. The Arboretum's *Eucalyptus* and *Acacia* collections are now probably the largest, in number of species, in the country. The Daylily collection has been moved to its permanent location. Our *Protea* collection has been planted in permanent location and experimentation with soil mixtures and containers for this group is producing some very interesting data.

The field nursery trial areas are developing very satisfactorily and additional plants of promise have been observed.

A considerable quantity of seed has been collected of rare and unusual plants which will be used to augment our collections and a portion distributed for testing in other sections of Southern California.

The Bottlebrush collection was planted in permanent location in the Australian section and already has shown how drought resistant these plants are and what poor soil they will tolerate.

Maintenance of all plantings has been kept at as high a level as possible with limited staff. The resulting growth has brought the plant collections to a point of considerably enhancing the appearance of the Arboretum grounds.

A shipment of seed and cuttings from the Forestry Department of Israel has given us a good start in obtaining material for an authentic biblical garden.

Our extensive collection of forty-five species of bamboo has also been planted in its permanent location in the Palm and Bamboo area.

LUX ARBORETUM ANNEX:

Minimum maintenance has been con-

ducted on the Lux Plantings. Certain of our proved tender plants have been planted at the Annex for trial under foothill frost-free conditions. Dr. Lux, who has acted as Honorary Curator of the Lux Arboretum Annex, contributed much time and effort in watering the collections and has gathered together about 125 varieties of Camellias which he has planted on the Annex. Plans have been completed by the Foundation for hiring a gardener-caretaker to be employed at the Lux Arboretum Annex starting this next fiscal year.

RESEARCH PROGRAM:

A. Under the County Agreement, research has been conducted on:

1. Trees and shrubs suitable for use in parks, parking lots and center, side, and intersectional panels of road rights-of-way. In this program have been included plantings of the mallee type *Eucalyptus,* the Bottle Brushes—*Callistemon, Calothamnus spp.* and *Melaleuca spp.,*—*Proteaceae, Acacias* and Bamboo.

2. Evergreen turf grasses and soil binding plants suitable for use in and around County Golf Courses, Play Grounds, Athletic Fields, Parks and Institutional Buildings. Approximately 50 turf grasses and 125 ground covers have entered into this program. A natural selection of Bluegrass, designated "Lucky" Baldwin Blue has shown sufficient promise for large scale testing. Six strains of *Zoysia matrella* have been selected from our trial plots for large scale testing, having shown both initial fine drought resistance and winter greenness.

3. New frost resistant evergreen plants. The year produced no unusual cold weather in which to make critical frost tolerant selections; however, records were taken on all damage done to plants during the winter.

4. Ornamental trees and shrubs with exceptional tolerance for smog. Routine observations of plant materials were made for smog damage after periods of intense smog.

B. Under Louis B. Martin's guidance, the completion of the March, 1952-53, agreement between the Foundation and Monsanto Chemical Company for the purpose of testing Krilium Soil Conditioner in our soils from the standpoint of use by the home gardener on March 11, 1953. This agreement was renewed for an additional year on a maintenance basis for a number of the plots to be observed over longer periods.

C. Dew precipitation observation. Recording of dew precipitation by means of the Duvdevani Dew Gauge in cooperation with Mr. Duvdevani of Israel and California Institute of Technology.

LIBRARY:

Classifying, cataloguing, shelving, indexing done. Shelf-listing underway.

LASCA LEAVES:

With the Spring Issue, 1953, joint publication with the Southern California Horticultural Institute was achieved. The periodical has changed from 8 pages to 24 pages, including cover. Mrs. Janet Wright was appointed editor. Quarterly issues will continue, January, April, July, and October.

PROGRAMS—on "The Arboretum"

Messrs. Nelson and Benson have prepared an illustrated series of lectures to show the many notable features of the Arboretum. This lecture has been presented to sponsored groups and is designed to have its listeners realize that in this hurried world there are still such places within the city as the Arboretum, left more or less as nature intended them.

The following are groups for which Mr. Nelson and Mr. Benson gave their program:

All Saints Episcopal Church—Jr. Women's Guild—Pasadena
Alpha Xi Delta—Arcadia
Civitan Club—Arcadia
County of Los Angeles—Board of Supervisors and County Employees—Hall of Records
County of Los Angeles—Division of Scales & Weights—Los Angeles
Crystal Lake Recreation Department—Crystal Lake
Daughters of the American Revolution—Arcadia Chapter
Daughters of the American Revolution—Santa Anita Chapter
First Congregational Church—Pasadena
Kiwanis Club—Arcadia
Kiwanis Club—Monrovia
Kiwanis Club—Sierra Madre
Lady Bug Garden Club—Altadena

Lake Arrowhead Woman's Club—Lake Arrowhead
Lions Club—Arcadia
Medical Wives Association—San Gabriel Valley
Mu Sigma—San Gabriel Valley Branch
Native Daughters of the Golden West—San Gabriel Valley
P. E. O.—Arcadia
Presbyterian Church—Schooners Club—Arcadia
Presbyterian Church—Schooners Club—Monrovia
Ex-Presidents of the Parent Teachers Association of San Fernando Valley
Shakespeare Club—Pasadena
South East Horticultural Society—South Gate
Woman's Club of Inglewood—Garden Section
Woman's Club of Monrovia—Garden Section
Woman's Club of Monrovia—Juniors

ARTICLES PUBLISHED:

Several articles have been published in various periodicals other than *Lasca Leaves* during the past year. Dr. Seibert having six published, Mrs. Shearer one and Mr. Martin one.

PUBLICITY:

The excellent publicity furnished the Arboretum by the Los Angeles area during the 1952-53 fiscal year has included 75 articles and 56 illustrations, inclusive only of those clippings which have reached the Arboretum office.

TALKS:

Twelve talks have been given by the Arboretum staff since July 1, 1952. Dr. Seibert, seven; Mr. Spalding, one; Mr. Nelson, one; and Mr. Martin, three.

PROGRAMS, TELEVISION AND RADIO PUBLICITY:

Dr. Seibert and Mr. Nelson gave two radio programs; one taped and one live program. Mr. Spalding and Mr. Martin gave one television program.

CONTRIBUTIONS OF SPECIAL MENTION: See *Lasca Leaves*, Spring Issue, 1953. Vol. III, No. 3, p. 54. *Names, Notes and News* Column.

LIBRARY ACQUISITIONS: See issus of *Lasca Leaves* as noted immediately above, p. 50.

HOLLYWOOD GARDEN CLUB:

We are indebted to the Hollywood Garden Club for a contribution of $100.00 toward the purchase of special plants for the Arboretum. These funds were used for the purchase of 12 palms for use at the Service Entrance. [Note: Hollywood Garden Club should be added to the representative clubs participating in the Arbor Day program, as noted on p. 55 of the above mentioned *Lasca Leaves*, Spring issue.]

VOLUNTEER WORKERS:

Dr. George P. Lux, acting as Honorary Curator of Lux Arboretum Annex, Care of Lux Arboretum Annex.

W. Dan Quattlebaum, Weed Control.

Mrs. Ruth Spalding, Office hours.

GROUP TOURS OF THE ARBORETUM:

4,322 individuals were conducted through the grounds on guided tours, which made up 145 tours by appointment, consisting of sponsored groups of many different interests, e.g. Scouts, Brownies, other school groups; Garden Clubs, etc.

MEMBERSHIP OF CALIFORNIA ARBORETUM FOUNDATION, INC.:

Annual Associate Members	77
Annual Members	192
Annual Contributing Members	46
Annual Sustaining Members	2
Life Members	12
Founder Members	3
Honorary Life Member	1

Total of 333 Members—of which 62 are Garden Clubs.

EXCHANGE PUBLICATIONS:

112 institutions to date
45 Foreign
67 United States
Increase of 7 over last year.

FINANCIAL SUMMARY

July 1, 1952, to June 30, 1953

Total Income		
Memberships	$ 3,537.00	
Subventions—		
L. A. County	56,600.00	
Endowment Fund	600.00	
Architect Fund	2,650.00	
Grounds Transportation Fund	105.00	
John Francis Douglas Memorial—Cash and Securities	1,739.00	
Rentals	3,862.50	
Donations	10,467.02	
Publications	14.50	
		$79,575.02
Total Expenses		78,465.69
Total Fixed Assets		36,213.48

Total Non-cash Contributions		
Books-pamphlets-reprints	$ 2,238.85	
Flower Prints & Paintings	50.00	
Arboretum Equipment	12.50	
Labor (Administrative)	77.00	
Labor (Arboretum)	226.80	
Photographs & Film	84.25	
Survey & Herbarium	4.10	
Plants & Seeds	502.15	
Misc. materials and services	6,859.99	
		10,055.64
Historical Committee Fund		
Reserve	$ 6,070.32	
Income	45,152.00	51,222.32
Expense—		
Restoration work.		48,587.67
Garden Tour Fund		
Reserve	$ 2,886.85	
Income	99.02	2,985.87
Expenses		1,984.42

MISCELLANEOUS GIFTS RECEIVED BY THE ARBORETUM DURING THE PAST YEAR

(exclusive of money donations:)

BENSON, H. H.—110—35mm Kodochrome Slides of the Arboretum prior to 1949.

COOK, MRS. WILLIAM M.—41 Herbarium specimens of Sinaloa Plants.

FARNHAM, GEO. J.—12—35mm Kodachrome Transparencies.

HAGE HARDWARE—1—6″ DeWald Dado Blade

HOLLOWAY, HOMER T. — 100 Economat Masters and 1 Typewriter Ribbon. 500—8 x 10 Arboretum Maps.

HOOCKER, LOUISE R.—Crystal Pendent (originally from "Queen Anne Cottage").

LAWLER, OSCAR—truckload of 2″ x 12″ planks.

LEGG, SUPERVISOR HERBERT C.—4 Arbor Day Photographs.

LOS ANGELES CHAMBER OF COMMERCE—2 Vols. "Horticultural Colour Chart."

LOS ANGELES TURF CLUB—104 Loads of Composting Straw.

LYON VAN AND STORAGE CO., Pasadena—storage and delivery of the Baldwin coach.

MONSANTO CHEMICAL CO.—
6 pounds of Krilium.
2 bottles of Santophen 20.
10 pounds of "Folium."
5 Gal. Wet Krilium 189-W.

OGE, MISS ALICE—One picture—"Three Zones—Mt. Shasta."

PLANT FOOD CORP.—
100 lbs. of Calcium cyanamid.
1 lb. of Kemix.

REYNOLDS, LEE. T., Gyro Engineering Co.—2 gals. Refined Petroleum Soil Conditioner.

ROSTLER, FRITZ S., Golden Bear Oil Co.—2—5 Gal Cans of Golden Bear Dust Binder.

SANTA ANITA CAMERA SHOP—7 Cut Film Holders (4 x 5).

SAUNDERS, MRS. MIRA C.—Four Broughton Paintings.

SOUTHERN CALIFORNIA GREENHOUSE MFRS.—1 Load Redwood Shavings.

STEINEN, OTTO P.—Naugatuck Chemical—5 lbs. Malec Hydrazide.

WEST, WARREN F.—2—8 x 10 Photographs.

WILMANS, MRS. STEPHENS — I watercolor sketch, "Queen Anne Cottage"; for use on the souvenir ticket to the Arboretum for Arcadia's 50th Jubilee Celebration during August, 1953.

LIBRARY GIFTS:

AMERICAN BEGONIA SOCIETY LIBRARY—3 books.

AYRES, DR. SAMUEL, JR.—1 book.

BEHRENDS, MRS. DOROTHY—3 books.

BROMELIAD SOCIETY—1 periodical.

BRUMAN, HENRY J.—Three Reprints.

BUCK, QUINN—48 periodicals.

CAPE TIMES LTD.—1 Protea Calendar.

DELACOUR, DR. JEAN—1 periodical.

DRURY, NEWTON B.—1 book.

FEBRIS, DR. HUMBERTO A.—5 pamphlets.

HOAK, MISS CHARLOTTE—20 periodicals.

JUHREN, GUSTAF—2 Reprints.

KIMBALL, M. H.—1 pamphlet.

KLINE, CHARLES—4 books.

KUCERA, DENIS—11 books.

LUNDIN, ALBERT C.—725 pamphlets, 90 periodicals and 13 books.

LUX, DR. GEORGE P.—2 books, 2 periodicals, 1 pamphlet.

MARTIN, LOUIS B.—1 book, 60 periodicals.

MENNINGER, MR. AND MRS.—1 Garden Horticultural Dictionary (4 Vols.).

MILLER, DR. HYMAN—1 book.

NOLAN, MRS. GLADYS—108 periodicals, 2 books.

PUGH, EDWARD—5 periodicals.

RANCHO SANTA ANA BOTANIC GARDEN—13 books; 626 pamphlets; periodicals.

ROCKWELL, EDWIN C.—23 periodicals.

ROLLINS, REED C.—4 pamphlets.

SEIBERT, DR. R. J.—12 books, 89 periodicals, 110 pamphlets.

SCHULTES, RICHARD EVANS—4 reprints.

TRAUB, DR. HAMILTON P.—1 pamphlet, 2 reprints.

VERDOORN, FRANS—1 book, 179 pamphlets.

WENT, DR. FRITS W.—1 book.

WILKE, JOHN—2 ledgers from "Lucky" Baldwin Estate.

WILLIAMS, MRS. FRANCES R.—6 periodicals, 3 pamphlets.

WRIGHT, JANET—4 books.

GIFTS OF PLANTS AND SEEDS RECEIVED BY THE ARBORETUM:

ADELAIDE BOTANIC GARDEN, Australia.

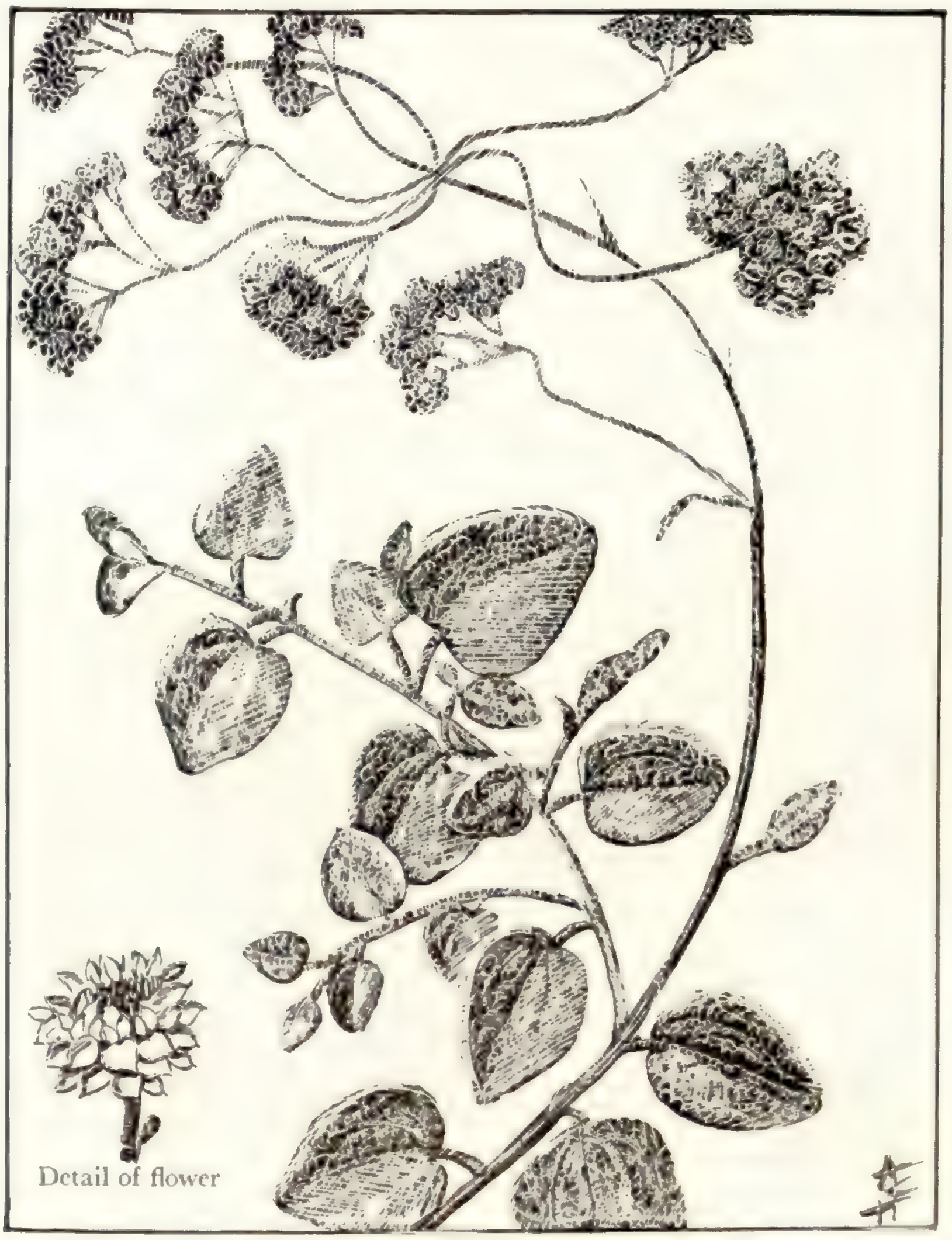
AGGELER & MUSSER SEED CO.

ALLAN NURSERY, So. Carolina.

AYRES, DR. AND MRS. SAMUEL, JR.

BADGLEY, MRS. FRANK B.
BANKS, FRED M.
BAUER, MRS. HARRY J. (Magnolia collection).
BECK, LLOYD.
BEHRENDS, MRS. DOROTHY S.
BENSON, BERNARD W.
BERGSTROM, MR. AND MRS.
BERNHARDT, DR. A. A.
BETTS, MRS. FLOYD
BLASZIC, TONY
BODGER SEEDS, LTD.
BOTANIC GARDENS, Sydney, Australia.
BUCK, W. QUINN
CAGNEY, J. PRODUCTIONS
CALIFORNIA GARDEN CLUBS, INC., District 2B (Magnolia collection).
CALIFORNIA INSTITUTE OF TECHNOLOGY—Earhart Laboratories.
CANAL ZONE EXPERIMENTAL GARDENS
CARTER, MRS. L. C.
CAUFFIELD, JIM
CHEVIOT HILLS GARDEN CLUB (Magnolia collection).
CLARKE, J. HAROLD
COLUMBIA PICTURES
CONDIT, DR. IRA
CONNELL, MRS.
DAKIN, MRS. RICHARD Y.
DANIELS, VIC
DAVIS, MILDRED
DEIGAARD, LOUIS—Deigaard Nursery
DELKIN, A. C.
DEWOLF, GORDON P.
DIMITMAN, J. C.
DUNCAN & DAVIES, LTD.
DURNELL, MRS. CHAS. E.
ERB, IRWIN
EVANS & REEVES NURSERY
EVERGREEN NURSERY
FAWCETT, E. J.
FAWCETT, HARRY
FERREYRA, RAMON, Lima, Peru.
FIELDING, ROY W.
FLOTHER, ERIC
FOSTER, MULFORD B.
GARDEN CLUB OF SOUTH PASADENA
GARDEN STUDY CLUB (Magnolia collection)
GARDEN PLANNERS (Magnolia collection)
GAYLORD, S. W.
GERMAIN'S, INC.
GILLOON, JIM
GIRIDLIAN, JAMES N.
GOOR, DR. A. Y., Nathanya, Israel
GUY, A. N.
HAGEN, WILLARD
HALLBERG, CHAS. A.
HEARN, CLARENCE S.
HERSCHER, DR. H. L.
HOAK, CHARLOTTE M.
HOLLYWOOD WOMAN'S CLUB—Garden Section (Magnolia collection)
HOME GARDEN CLUB (Magnolia collection)
HOTTES, ALFRED
HOWARD, JAMES F.
HOYT, R. H.
HUNTINGTON BOTANICAL GARDENS
IMLE, DR. E. P.
INTERNATIONAL FLOWER SHOW—Educational Committee
JOHNSON, ERIC
JOHNSON NURSERY (HOWARD)
KEELINE-WILCOX NURSERIES
KELEHER, MR. AND MRS. MARTIN B.
KENNARD, MISS
KEYES, MR. G. P.
KUCERA, DENIS
LANG, FREDERICK M.
LANGFORD, MICHAEL
LAS JARDINERAS GARDEN CLUB (Magnolia collection)
LITTLE GARDEN CLUB OF PASADENA (Magnolia collection)
LOIBEL, ROBERT
LORENZ, ELMER
LOS ANGELES CITY DEPT. OF RECREATION AND PARKS
LOS ANGELES GARDEN CLUB (Magnolia collection)
LUX, DR. G. P.
MARSHALL, MR. AND MRS. HARRY C.
MARSHALL, M. LESLIE
MATHIAS, DR. MILDRED
MCCAULEY, FRED E.
MENNINGER, MRS. E. F.
MISSOURI BOTANICAL GARDEN
MONROVIA NURSERY
MOORE, MR. AND MRS. ALBERT R.
MOORE, DR. WM. H.
MORTON ARBORETUM, Lisle, Ill.
NATIONAL BOTANICAL GARDENS, Kirstenbosch, So. Africa
NELSON, DEWEY
NEUGEBAUER, MISS EDNA
NEW YORK BOTANICAL GARDEN
NOLAN, MRS. GLADYS C.
NORTHRUP KING & CO.
NORTHWEST GARDEN CLUB (Magnolia collection)
O'DONNELL, DR., Perth, Australia
PACIFIC PALISADES GARDEN CLUB (Magnolia collection)
PACKARD, MRS. JUDITH
PINNELL, ETTA A.
POWELL, NORRIS H.
QUATTLEBAUM, W. DAN
RAI RAJRANG BAHADUR SINGH, New Delhi, India
RASCHKA, ALBERT
REEDER, MABELLE C. AND FRIENDS
RICE, W. E.
ROCHESTER, NEW YORK, PARKS DEPT.
ROEWEKAMP, FRED W.
ROSECRAFT GARDENS
SEIBERT, DR. R. J.
SLICK, THOS. H.
SORIANO, DR., Argentina, So. America
SOUTHERN CALIFORNIA HORTICULTURAL INSTITUTE (Magnolia collection)
SPALDING, GEORGE H.
STONECYPHER, MRS. W. M.
SUBTROPICAL EXPERIMENT STATION—Florida
SULLIVAN, MRS. C. A.
TANNER, MRS. RALPH
TOWER, RAY C.

TRAUB, DR. HAMILTON
TURNER, MRS. LEE WRAY
TURNER, MRS. MARIE
UNIVERSITY OF CALIFORNIA BOTANIC GARDEN
UNIVERSITY OF CALIFORNIA AT LOS ANGELES
UNIVERSITY OF WASHINGTON ARBORETUM
U.S.D.A. COOPERATIVE PLANT FIELD STATION, Costa Rica
U.S.D.A. DIV. OF PLANT EXPLORATION AND INTRODUCTION—Beltsville, Md.
U.S.D.A. DIV. OF PLANT EXPLORATION AND INTRODUCTION—Glenn Dale, Md.
WELLS, DR. E. W.
WENT, DR. FRITS W.
WHITE, MR. AND MRS. W. E.
WOOD, CLYDE C.
WOOLLEY, DONALD
WRIGHT, JANET
YOCH, FLORENCE
ZVOLANEK, WM. & CO.



HELICHRYSUM PETIOLATUM

Scratchboard Sketch. Mr. Alfred Hottes has given us another example of a most interesting technique of botanical illustration, including the following notes to accompany it; both of his own composition:

Helichrysum. Cudweed Everlasting: Hell-i-kry-sum. Name from the Greek, *sun* and *gold*, referring to the golden center of the flower. Family, *Compositae*, related to daisies.

The Cudweed Everlasting, *Helichrysum petiolatum* (*Gnaphalium lanatum*), is a rather common shrubby plant with slender shoots that are vinelike and with woody stems. The leaves are oval, heart-shaped at the base, white and woolly on both surfaces. The flowers are small, everlasting, in dense corymbs, 2″ across; the florets turn greyish and the flowers are really not attractive. This is one of plants which could easily be called "Dusty Miller."

Its more familiar relative is the common annual strawflower, *Helichrysum bracteatum*.

Uses. The irregular habit of growth adapts this shrub to steep hillsides where it can spread at ease. As stated above its flowers are not attractive so one can keep this plant sheared back when grown in more refined situations.

GRASSES FOR OUR HOME LAWNS

R. J. SEIBERT *and* L. B. MARTIN

ONE of the research projects at the Arboretum has been the development and maintenance of various lawn grasses. This program has been guided by:

1. Desire for grasses or grass combinations in our Southern California area which will provide a year-round green lawn, emphasizing drought tolerance.
2. Need of the home owner for a place to observe mature lawns of acceptable grasses growing under a variety of conditions; thus, enabling him to select the most suitable lawn material for his particular growing area.
3. Need of a center for the accumulation and dissemination of information for home lawn preparation and maintenance in the Southern California area.

The first grass plots were started during the summer of 1950. The number of plots and grass species has been increased since that time. Observations have been made on many of the common lawn grasses. Selection and isolation of certain grasses with potential value for warm season lawns has been under way. As this project continues, the most desirable grasses will be isolated for further study. It is hoped that such a program will result in the fulfillment of the needs outlined above.

Thus far, two grasses have been of particular interest to us, namely the Bermudas and the Zoysias. Observations concerning these two tropical grasses will be presented in some detail. The other grasses and grass combinations will be included in brief in order to indicate the scope of our work.

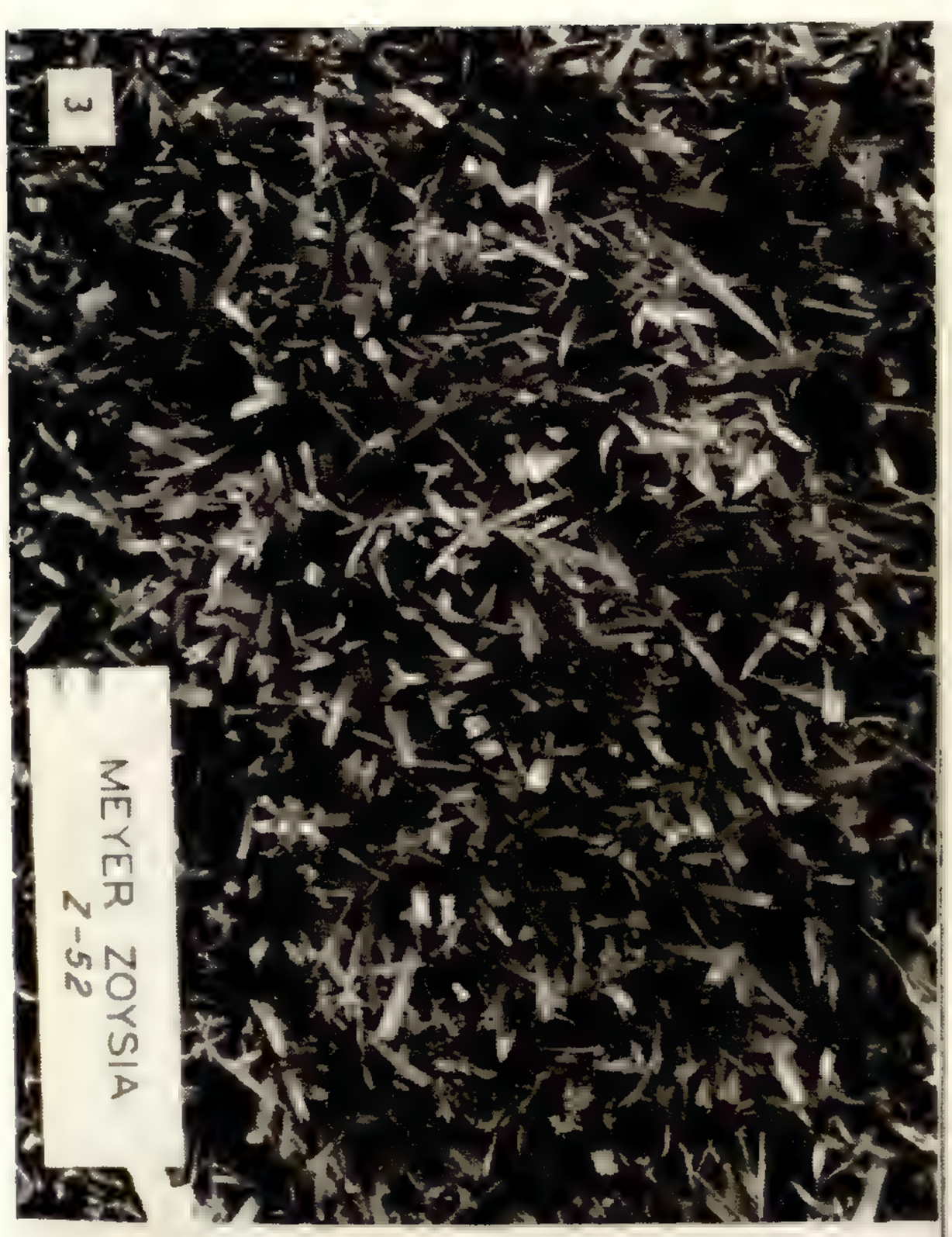
Cynodon dactylon—Bermuda grass. Everglades No. 1, No. 2, No. 3: Single plot of each of these Bermuda strains were established at the Arboretum in May, 1952. Plugging material was obtained from UCLA. Larger isolation plots were established in May, 1953, using plugs from the 1952 planting. In general, the growth habit of these strains appears to be more uniform than that of common Bermuda; the absence of long, coarse runners being notable. Summer color ranges from the light green of Everglades No. 1 to the rich green of Everglades No. 3. Summer maintenance includes a thorough soaking every ten to fourteen days and light nitrogen fertilization. During the winter, all three strains are dormant and lose their green color. Of the three, Everglades No. 3 would seem to be preferred both as to leaf texture and summer color, for home lawn grass. Figure 1 shows the leaf texture of Everglades No. 3.

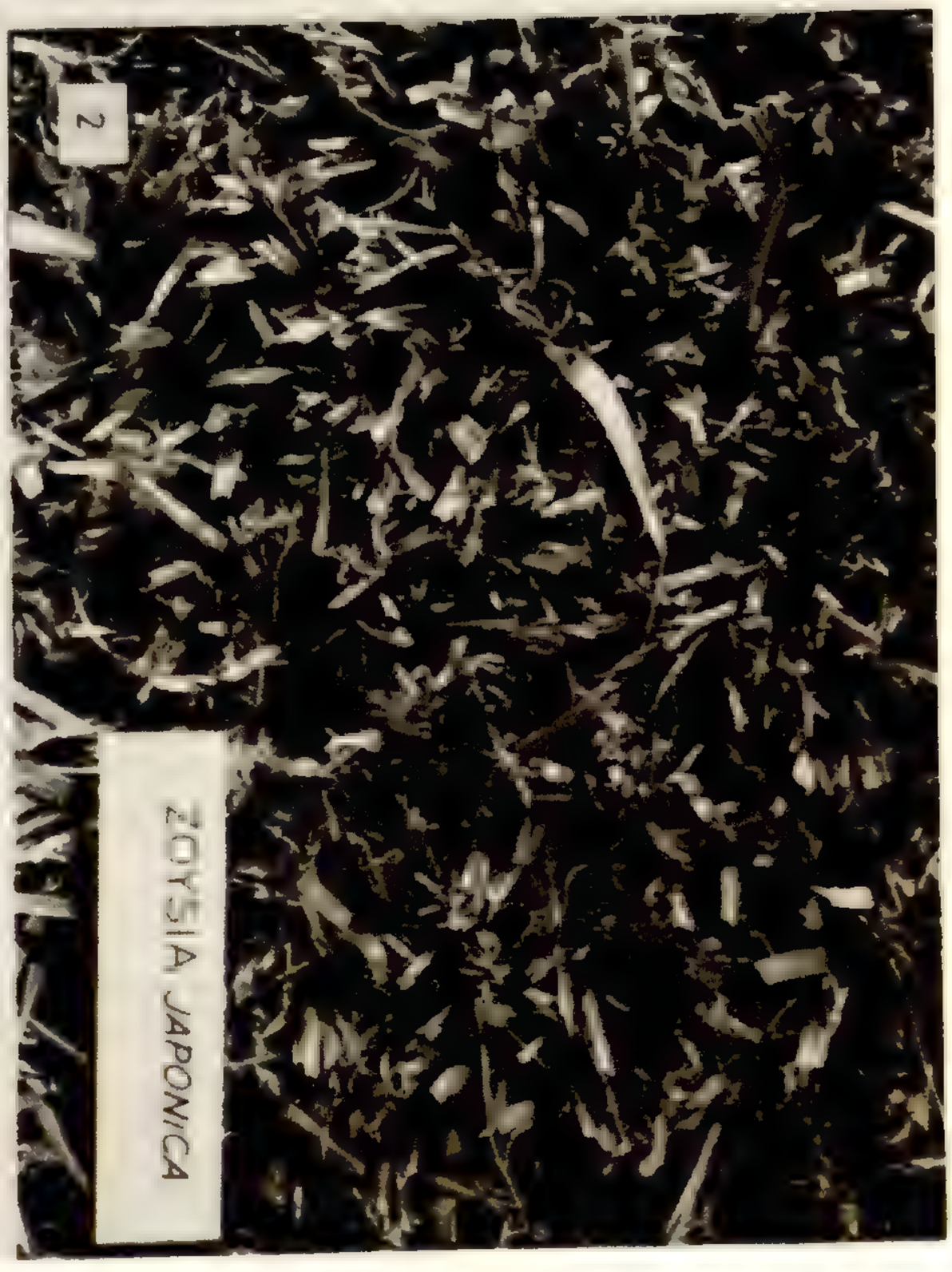
U-3 Bermuda: Our material was obtained from UCLA in 1951. Plantings have been made on clay and on sandy soils. The grass has grown well on the clay site; on the sandy site it has covered much more slowly and is of lighter color. True to the species U-3 browns off in the winter. This strain, however, becomes green considerably earlier in the spring than any of the other Bermudas observed here.

Of particular interest this spring was the profusion of flowering heads appearing on all the plantings of our Bermuda strains. In spite of the winter color, Bermuda grass is an excellent warm season plant, providing under proper management, a tight, weed free, green lawn from early spring to late fall. It would appear possible to combine the Bermudas with certain cool season grasses in order to produce a year-round green lawn.

Zoysia—This grass is native to tropical and eastern Asia. Various species are recognized by the following common names: Manila grass, Japanese lawngrass, and Mascarenegrass.

Z. japonica—Japanese lawngrass: The coarsest appearing of the Zoysias. Seed of six strains of this species came to the Arboretum from USDA, Beltsville, Maryland, in 1950. Small plots were established from this seed that same year.





Figures 1 to 4. Illustrating leaf shape and texture of three warm season grasses. Note the somewhat finer leaf of the Meyer's Zoysia, a strain of *Zoysia japonica*. See text for figure explanation.

Two large plantings were made in April 1952, using sprigs from the 1950 plots. Growth of *Z. japonica* is moderate; our sprigged plots were completely covered in a year and a half with a dense, leafy mat. Summer color is a light green, winter color, straw. No observable strain differences have appeared within this material.

Figure 2 illustrates the leaf appearance of one of these strains.

Z. japonica—Meyer's or Z-52: This strain has a finer leaf, a more upright growth habit, and a deeper green color than the species. The Arboretum material came from UCLA in 1952 as part of a vegetative clone. During the winter of 1952-53, it retained its green color several weeks longer than the other strains of this species. See Fig. 3.

Z. matrella—Manila grass: This species has narrower and shorter leaves than *Z. japonica*. Dr. C. V. Piper brought specimens of *Z. matrella* to the United States from the Philippine Islands in 1911. The Arboretum's first planting was through seed obtained from Beltsville in the summer of 1950. Nine of a total of twelve seedlings were selected in the spring of 1951, on the basis of retaining some winter greenness. Two plantings were made from these selections, one in filtered shade and the other in full sun. Both plantings are doing well in their respective locations.

A second lot of *Z. matrella* seed from Mayaguez, Puerto Rico was divided into two parts and propagated as follows: 1) a 1951 summer attempt resulted in poor germination; few seedlings survived; 2) a 1952 spring attempt resulted in good germination and the production of two successful plots of grass. Selections based on winter green color, leaf shape, and leaf texture have been made from various seedlings of this second planting. Of particular interest at present are the selections established in the spring of 1953 between the double driveways at the future entrance to the Arboretum. From these selections may come one of the grasses which will eventually be used throughout the Arboretum. Fig. 4.

Z. matrella—"Flawn": A selection of this species originated in Mayaguez, Puerto Rico in the winter of 1947. Two plantings are now under observation at the Arboretum; the first from UCLA, supplied as a vegetative clone; and the second from seed of this clone, supplied by Ken Rogers, Yuma, Ariz. The vegetative material has grown well though slowly; the seeded grass has made very poor growth, exhibiting extreme variability of leaf shape, texture, and color. No winter greenness was observed during the 1952-53 season in either of the two plantings.

Zoysias in General: The chief apparent difference between the species *Z. japonica* and *Z. matrella* is in the size of the leaf. The former has a broad, coarse leaf; the latter a narrower, shorter leaf. From our observations a less apparent but equally important difference is that *Z. matrella* is more drought tolerant than *Z. japonica*.

There are some features in which the two species share equally: 1) both are relatively free from our known grass diseases; 2) neither appears to be bothered by insects; 3) both are adaptable to a variety of soil types; 4) both are low growing, reducing the need for frequent mowing; 5) a mature turf of either one crowds out weeds; and 6) both will bear heavy traffic and remain in serviceable lawn condition.

The one disadvantage of these grasses is their winter color. It appears from our preliminary observations that variation for winter greenness is greater within *Z. matrella* than within *Z. japonica*. It is on the basis of this that our present selection program is stressing *Z. matrella* as one starting point for a single grass, or a combination of grasses suitable for this particular area.

Blue Grasses: Two blue grasses have been considered worthy of investigation. The first of these is Merion blue, a comparatively new introduction. Fall plantings develop into a deep green, spongy, thick turf in a short time; however, during the summer months considerable difficulty arises in keeping this turf in top condition. Carefully planned and regular care is required and many questions are still unanswered as to what are the best maintenance practices for this grass in our area.

The second blue grass we have called "Lucky Baldwin." An old lawn of this grass, mixed with common Bermuda, grows near the Reid Adobe on the grounds of the Arboretum. Little is known of the origin or past natural development of this blue grass; consequently, seed and vegeta-

tive material have been isolated for further study and identification. Because of its apparent naturalization through the years, it is possible that this blue grass holds potential value for wider use in our area of Southern California.

Of the two grasses, the "Lucky Baldwin" has shown better warm weather and drought tolerance than the Merion blue; however, our limited observations would not warrant our favoring one of these grasses over the other at present.

Grass Combinations: A possible answer to the desire for an all-year green lawn may be found by combining cool and warm season grasses. That such grass combinations are plausible is illustrated by the same plot of "Lucky Baldwin" blue grass, and the common Bermuda mentioned earlier. Balance in quantity and compatibility between these two grasses is such that from season to season, first one and then the other predominates, the net effect being a green lawn at all times of the year.

Although too little is known to state the possibilities of other grass combinations, the following combinations are now under observation at the Arboretum:

1. Everglades No. 2 plugged into established Merion blue.
2. Everglades No. 3 plugged into established Merion blue.
3. U-3 Bermuda plugged into established Merion blue.
4. Merion blue plugged into established *Zoysia japonica.*
5. Merion blue plugged into established *Zoysia matrella.*
6. "Lucky Baldwin" blue plugged into established *Z. japonica.*
7. The natural combination of Bermuda and "Lucky Baldwin" blue.

In time, the scope of the grass research project will probably be restricted to the further refining of a few grass species and species combinations showing the desired qualities of drought tolerance and year-round greenness. The testing of new grass introductions under the growing conditions of Southern California will be carried on; however, such testing will be accomplished on small plots rather than on the present large lawn type areas. A permanent feature will be the continued accumulation of library information concerned with all types of grasses and home lawn care.

From time to time we hope to inform our readers of the further progress in our work on home grasses for this area.

* * *

BIRD NOTES

W. Dan Quattlebaum

The varied habitats at the Arboretum make it attractive to nesting birds. No "house-to-house" census has been made at the Arboretum. The widely scattered records of 1953, which I give here, were made from incidental observations. This list may be fairly complete, and it may not. Pied-billed Grebe, Mallard—wild female which came the fall of '52 and, in '53, mated with a "tame" Mallard,—Red-bellied Hawk, Sparrow Hawk, Valley Quail, Ring-necked Pheasant, Coot, Killdeer, Band tailed Pigeon, Mourning Dove, Chinese Dove, Screech Owl, Anna's Hummingbird, Red shafted Flicker, Ash-throated Flycatcher—nested in a bird-house which Titmouse had used earlier,—Black Phoebe, Scrub Jay, Crow, Titmouse, Bush-tit, Slender-billed Nuthatch, House Wren, Bewick's Wren, Mockingbird, Russet backed Thrush, Tule Yellow-throat, Western Meadowlark, Red-winged Blackbird, Hooded Oriole, Black-headed Grosbeak, Blue Grosbeak (?),—he sang around the edges of little pond from June 11 to July 9,—House Finch, American Goldfinch, Spotted Towhee, Brown Towhee, Song Sparrow.

* * *

"Not to have so much as a bowing acquaintance with the birds that nest in our gardens or under the very eaves of our house; that haunt our wood-piles; keep our fruit-trees free from slugs; waken us with their songs; and enliven our walks along the roadside and through the woods; seems to be, at least, a breach of etiquette toward some of our most kindly disposed neighbors."

Neltje Blanchan

TO AN ORIOLE

"How falls it, Oriole, thou hast come to fly
In tropic splendor through northern sky?
At some glad moment was it Nature's choice
To dower a scrap of sunset with a voice?

E. Fawcett

PERENNIALS *WILL* GROW IN CALIFORNIA

MILDRED DAVIS

MANY PEOPLE who like flowers and gardens have only a vague idea as to what perennials are and to what use they may be put in the garden. Dim recollection of reading about "perennial borders" *can* be turned into dynamic acquaintance with these useful plants which, if well chosen, can simplify garden maintenance, as well as provide interesting accents of line and color throughout the year, and for many successive years.

The definition of "perennial," according to Webster is "unceasing, never failing, coming back year after year." Any plant which does that is worth knowing. A perennial plant once set out and given average care increases in size and beauty with age. The average human would like to do as well! Some perennials are herbaceous—that is, they disappear entirely during the winter, but come spring, there they are again! Others retain basal foliage all year, and still others bloom almost all year 'round. The average garden contains a half dozen or more perennials—not strangers at all; for example, the Blue Lily of the Nile (*Agapanthus*); Day Lilies (*Hemerocallis*); Shasta Daisy and Marguerite; Chrysanthemum and Delphinium.

A perennial border, or flower bed, is not necessarily the only place for perennial plants. They may be planted around trees and shrubs, but sometimes in such positions they must be hardy enough to forage for themselves in competition with tree or shrub, for proper nourishment. Encroaching roots of the background planting are often greedy and far-reaching.

To achieve the best effect in border or flowerbed planting, the area must be long enough and wide enough for groups of the same plant to be repeated; although I have seen charming borders less than twenty-five feet long. Adequate length and width provide room for various heights and spreads of the plants themselves, allowing each its own sphere and accent. The tallest plants are best placed at the back of a bed or border to be viewed from only one side, other plants grading down in height to the mere trailers along the front edge. Variation in form relieves monotony: e.g. the spike-like growth of *Veronica spicata* or of *Kniphofia vanilla;* the high mound-like growth of *Aster frikarti;* or the airiness of *Linaria* "Cannon J. Went" and of *Thalictrum;* the stiff fan shape of *Moraea catenulata.* Scale and form, and color harmony are just as important in the creating of a well-proportioned, pleasing perennial border as they are in general landscape design.

Perennials may be divided roughly into several groups, each group having a different purpose: bold, overreaching ones may be used in large public areas; alpine or rock garden types are particularly useful in dry walls, planted in light well-drained soil; the larger number fall into a group of the "tried and true," usable in the average perennial border but needing to be wisely chosen for sun- or shade-tolerance and for boistrous or shy growth. Where space permits, all groups may be drawn upon. The average home plot, however, affords a space only about twenty to thirty feet in length and four to seven in width, which definitely limits the choice.

In restricted areas, like the home plat, very careful planning is necessary. This begins with deep soil preparation because once the perennial bed is planted it is not possible to dig it deeply again until time to divide and reset the plants—an occurrence of every three to four years, in most cases. Generous amounts of humus and fertilizer should be dug in and allowed at least a short interval for seasoning. If this process is started early enough in the spring or even mid-winter in southern California, the "seasoning" period is a good time to perfect the plans on paper. A color scheme is chosen and the decision made as to whether a glorious display of color all at one time is desired, or less spectacular blooming over a longer period. Plants are listed with their color, height, and time of bloom. Those are marked which disappear entirely in winter so that seed of winter annuals may be chosen for sowing over the "remains" of the perennials—e.g. annual phlox, annual *Dimorphotheca, Linaria,* larkspur, *Nemesia,* hyacinth-flowered candytuft, etc. The best perennials in the trade are sold in plant bands, pots, or gallon cans, not in flats like annuals. First expenditure may seem high but, remember, these plants live on and on. Many perennials can be grown from seed, of course, and if the gardener is foresighted enough he will sow seed in July or August for the next summer's flowering, or make tip cuttings, or root cuttings. Planting from one's own nursery bed, or from a commercial nursery, takes place in the spring to best advantage, not later than earliest summer, as far as perennials are concerned. The plants should be set fairly closely, anticipating adequate growing room yet allowing for no bare ground to be visible when the bed is in mature growth. Where staking is necessary it should be done unobtrusively with green stakes and twine tied loosely, or with brush trimmings and twigs which often make excellent supports and are soon covered over with natural plant growth. When the blossoming commences, spent blooms should be kept trimmed from the plant in order to induce new blooms, prolonging the flowering season. When the first flush is over, most perennials respond to cutting back and being fed fertilizers, they then will reward the gardener with a second late flowering. An exception to the cutting back process is the Balloon Flower (*Platycodon*): pinching off the spent flowers is all that is necessary. If the flower stalks are cut no further

bloom will appear. Similar treatment may be given perennial Phlox and Canterbury Bells (really biennials).

Irrigation of the perennial bed is favored rather than overhead watering which causes the flowers to become water-soaked and the plants heavy enough to fall over. A water wand or soil soaker is a good device for there is never danger of the flowers or foliage getting wet and sun-burning with this method. Perennials often need to be sprayed for control of various pests such as snails, leaf hoppers, caterpillars, white fly, aphis, red spider, thrips; one of the all-purpose sprays will usually effect the necessary control. Ground mealy bug frequently infests an older border; for this, nicotine with dreft and water, sprinkling it in moist ground, may be used effectively, or one of the dichlor-ethyl-ether products.

Over a period of years the following have proved satisfactory in various situations as noted:

Sun Subjects

Achillea sulphurum: ferny foliage; flat flower heads of sulphur-yellow; summer-flowering; spreads; good cut flower.

Ceratostigma wilmottianum (Plumbago): airy bronze-toned foliage; one of the few true blue flowers, no lilac tones; long bloomer; summer- to fall-blooming.

Erigeron karvinskianus (Santa Barbara Daisy): low edging plant or ground cover; small white daisy with pink-toned backing of each petal or ray; almost continual bloomer.

Gaillardia "Sun God:" pure yellow; prolific flowering; but needs water, is not drought-resistant; good for cut flowers; summer- to fall-flowering.

Geranium [Cranes-bill type]: blue-lavender flower; fern-like foliage; self-sows and grows to about 18″; summer to fallflowering.

Hemerocallis (Day Lily): almost ever-blooming; hyperion yellow; favorites of the writer.

Hunnemannia: a lovely yellow poppy; needs good drainage; good for cutting; spring- and fall-blooming.

Kniphofia (Tritoma): Wayside hybrids: white, cream, yellow, coral flowers; narrow grass-like leaves; 2′ tall; long blooming through summer and autumn.

Matricaria (Feverfew): double type; fern-like foliage; tiny white flowers like miniature chrysanthemum; very strong-scented leaves; 2′-3′ tall; needs room for spreading habit.

Penstemon heterophyllum a California native; blue-flowered penstemon; 18″ high; spring- to fall-flowering.

Physostegia (False Dragonshead): white, lavender-magenta flowers, 2′-3′ tall; spreads; late-summer bloomer.

Platycodon grandiflora (Balloon Flower): 3′ tall; buds like small balloons open to star-like blue or white flowers; summer- to fall-blooming.

Potentilla: species offer great variety, varying from trailing types to bush type 3′ tall; flowers from white and yellow to salmon, rose and cherry; flowers typical strawberry-flower form; spring- to fall-blooming.

Rehmannia: rose-pink, or white to cream (scarce) flowers, spikes to 3′; summer-blooming.

Salvia farinacea: blue spikes to 3′; long-blooming through summer; good cut flowers.

Scabiosa columbaria (Pincushion Flower): lavender and orchid-pink flowers; spreading and to 18″ high; good for cutting; spring- to fall-flowering.

Sidalcea: somewhat like miniature hollyhocks with basal leaves resembling those of the coral-bell; flowering spikes to 3′ tall; white, pink, lavender and rose.

Statice peresii (Everlasting Flower): lavender to lilac-blue flowers; continual bloom.

Stokesia: resembling giant batchelor button; blue-lavender flowers; 15″ tall; spring to fall bloom.

Shade Subjects

Anchusa italica: large forget-me-not type flower in deep blue spikes; summer blooming.

Anchusa myosotidiflora: smaller flowers than above species, but similar, and daintier; 18″ flower spikes in the spring.

Anemone japonica: bold evergreen foliage; tall sprays of poppy-like flowers of pink, white, and rose-red; fall flowering.

Aquilegia (Columbine): spring-flowering in many colors; full of grace; clean bright green foliage.

Aristea capitata: Iris-like foliage; sprays of deep-blue blossoms, small but numerous; summer-flowering.

Campanula murialis: "blue-bells;" low border plant to 10″; summer-flowering.

Cheiranthus (Wallflower): yellow and brown flowers, sweetly fragrant like lilac with a spicy tang; 15″; late winter blooming into early spring.

Digitalis ambigua: a true perennial; 18″; commonly called Foxglove; pale yellow flowers.

Linum flavum (Yellow Flax): 8″ umbels of yellow flowers in summer.

Note: It has been my experience that certain perennials thrive better in valley and inland regions, in hotter average temperatures, than at the ocean. *Pyrethrum* never thrives at the ocean, but grows wonderfully well in San Fernando Valley; it may be treated as an annual at the coast, not inland. *Dicentra* (Bleeding Heart) does better in colder sections; Perennial Phlox, better inland than at the coast and likewise *Scabiosa caucasica* and *Dianthus barbatus* (Sweet William). Doubtful performers with their special requirements require careful consideration before being given permanent place in the perennial garden.

REFLECTIONS ON A RECENT HORTICULTURAL VISIT TO SOUTH AFRICA

SAMUEL AYRES, JR., M.D., *Los Angeles, California, U.S.A.*

DURING the latter part of September and October of 1951, my wife and I had the rare privilege of exploring the horticultural and botanical wonders of South Africa, in pursuit of new species of flowering trees and shrubs which could be introduced into Southern California and add to the ornamentation and pleasure of living in that area. The trip was much too hurried (five weeks from starting to back home again) to see even a fair proportion of the plants which should have been seen, but after all, air travel makes a big difference. Johannesburg is only three nights and two days actual flying time from Los Angeles.

Through the excellent co-operation of our travel agents, Parry, Leon & Hayhoe, Ltd., Mr. A. F. Gunn, chief horticulturist of the South African Railways, Mr. L. Stewart, of Pan American World Airways, and others, we were able to meet many of the leading botanists and horticulturists and to see many interesting plants and much beautiful country. I particularly appreciated the privilege of speaking before and meeting the members of the Transvaal Horticultural Society.

We were particularly impressed with "The Wilds," in Johannesburg, the extensive planting of Jacarandas in Pretoria, which we saw in full bloom, the Caledon Wild Flower Gardens, the National Botanic Gardens at Kirstenbosch, and the remarkable farm of Mr. F. C. Batchelor at Stellenbosch, with sixty acres planted to Proteas, Leucospermums, Leucodendrons, Serrurias, etc. We saw many other beautiful places, and I am sure there were still many others, including some of the desert areas, which lack of time prevented our visiting.

The Transvaal Horticultural Society, the Arboricultural Society, the Botanic Gardens at Kirstenbosch and other botanical and horticultural groups are performing a most valuable service both to local residents and to visitors in studying, planting and conserving the wealth of indigenous floral material. On our last two days in South Africa, we learned of many beautiful flowering trees and shrubs growing in isolated areas in Northern Transvaal and Southern Rhodesia which apparently were known only to botanists and which apparently have not been introduced into cultivation, or if so, only to a very limited extent. It is to be hoped that these rare and beautiful plants will be propagated and that the species will not be allowed to be exterminated when some of these areas of limited habitat are opened to agriculture and the destructive influences of settlement.

It is also to be hoped that encouragement will be given to the more extensive planting of both indigenous and exotic flowering trees and shrubs, in preference to pines and other non-flowering or less showy species. Pretoria is a thrilling example of the use of flowering trees for city beautification, and its fame has spread far. I am wondering if many street parkways or highways are planted with Erythrinas, Calodendrons, tree Ochnas or other native species. They would certainly create much beauty, should thrive well in their own environment and would be of considerable interest to visitors.

The climate of Southern California resembles very much that of South Africa, especially the Cape Province. We have the so-called Mediterranean type of climate, with cool, moist winters and dry, warm summers, with the exception that our winters are not quite as moist as the Cape area and our summers are drier. The average rainfall in the City of Los Angeles is about fifteen inches and about twenty inches in the foothill suburbs, practically all of which falls in the winter season (October to March), with practically no rain for the warmer six months. There is very little frost near the coast, but a few miles inland the temperature may drop to freezing or even 26° in the colder areas and about once every ten years may go even lower. In the "average" areas we can grow Jacarandas, *Eucalyptus ficifolia*, *Bauhinia variegata*, Acacias, Poinsettias, *Lagerstroemia indica*, several species of Erythrinas, etc., *Hibiscus*, *Bougainvillea* and some of the more tropical plants will grow well in favoured locations and moderately well in "average" locations, but may be frozen back about every eight or ten years by a stiff frost. *Delonix regia* (Poinciana) cannot be grown here.

Many South African plants have been introduced into Southern California over a period of years, but probably more of the bulbs, succulents and perennials than flowering trees and shrubs. My chief interest has been in the latter class of plants which lend themselves well to civic beautification, which has been one of the off-shoots of my hobby and also includes the newly-established Los Angeles State and County Arboretum at Arcadia, California, near Los Angeles.

Leucadendron argenteum thrives well in this area, but is rarely seen, although it is now available at a few nurseries. There is an old and fairly large planting of them on a private estate in Santa Barbara, and we have a tree which is about fifteen years old and approximately twenty feet high which has withstood a

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temperature of about 25° and eight inches of snow three years ago. We also have a tree about eight feet high which I raised from seed.

There are a few specimens of *Calodendron capense* in the Los Angeles area, one in Elysian Park which is about fifty years old and blooms profusely every summer. One wonders why there are not more of them!

I have never seen *Virgillia* or *Podalyria calyptrata* in California, although they may have been introduced years ago and may have been lost. We have both of these species growing on our grounds, and *Podalyria* bloomed last year, although was slightly frosted this winter, but not seriously hurt. I have found Proteas and Leucospermums somewhat temperamental, although I have several established plants of *Protea susannae, P. compacta, Leucospermum nutans, L. Catherinae, L. Muirii* and several others in the family of *Proteaceae*.

We are able to grow a number of species of Erythrina or "coral tree," but there is much confusion regarding their classification, and I found considerable contradiction among botanical authorities in South Africa. We in California identify *Erythrina caffra* as having long flowers folding backwards along the stem and *Erythrina constantiana* as having flowers which are larger, more widely open and not hugging the stem so closely. No one in South Africa to whom I showed a Kodachrome transparency of one of these trees growing in California had ever heard of *E. constantiana*. Some identified it as *E. caffra*, but Dr. Pole-Evans said it was a species which he had seen growing wild in Central Africa in the Mountains of the Moon area and had apparently been introduced into South Africa; he was unable, however, to name it.

I was surprised to learn that there are over thirty species of Ochna in South Africa. Only one species, a shrub, *Ochna multiflora*, has been introduced into California, and it is proving very satisfactory and is most attractive with its yellow flowers and red and black fruits. We saw one species of tree Ochna in bloom in Queen's Park in East London, but were unable to identify the species.

Among the seeds which we collected on our trip I am happy to report good germination on many, and I am particularly gratified with the results in the case of a beautiful and apparently rare shrub from the Stellenbosch area having large spikes of cerise-coloured, pea-like flowers, which was identified at Kirstenbosch as *Hypocalyptus sophoroides*. Seeds of the bush type of Mesembryanthemum or a related species at Caledon Wild Flower Gardens are sprouting like grass. We are familiar with many species of "Mesems," but I had never before seen this bush type growing up to three or three and a half feet. All those who have seen Kodachrome pictures of it have expressed keen interest.

There are comparatively few spectacular flowering trees and shrubs indigenous to Southern California, most of our colourful wildflowers being annuals. *Fremontia californica* and *F. mexicana* are shrubs having large yellow flowers, *Carpenteria californica* is a shrub with white anemone-like flowers, and there are a number of species of *Ceanothus*, which are shrubs with flowers ranging in colour from white to blue to purple, slightly resembling *Ehretia hottentotica*. *Romneya Coulterii* with large white poppy-like flowers, *Dendromecon rigida*, or "tree poppy," *Mimulus* in several species are a few other outstanding flowering shrubs from Southern California. A good reference on this subject is "Flowering Shrubs of California," by Lester Rowntree, Stanford University Press, Stanford University, California.

As stated before, I have been especially interested in flowering trees and shrubs which would thrive in Southern California. Owing to similarity of climates, these same plants would probably succeed equally well in South Africa. Among the outstandingly beautiful flowering trees and shrubs which have been established here and which may not be familiar in South Africa, I will mention a few.

Thevetia thevetioides, from South America, is a small tree with large yellow flowers resembling Alamanda blossoms and tolerating a temperature down to about 26° without serious harm; also a smaller flowered fragrant species, *Thevetia nereifolia*.

Chorisia speciosa, from South America, is a large tree up to sixty or seventy feet, with large pink hibiscus-like blossoms; will tolerate slight frost but not a heavy freeze.

Many recently introduced small growing species of Eucalyptus from Western Australia, including *E. caesia* (pink), *E. macrocarpa* and *E. rhodantha* (large pink or red flowers), *E. eremophila* (large yellow or pink flowers), *E. Stowardii* (yellow), *E. erythronema* (red), *E. tetraptera* (red), *E. erythrocorys* (red bud, yellow flower).

Many new dwarf shrub Acacias (*A. decora, A. obliqua, A. trineura, A. gladiiformis, A. rubida*).

Many new bottle brushes, both Callistemons and Melaleucas in various sizes and colours (red, pink, yellow, green, white, purple, violet).

Fraxinus ornus or "flowering ash" is a moderate-sized hardy, deciduous tree with spikes of white plume-like flowers.

A number of Australian representatives of Proteaceae, such as Grevilleas, Banksias, and Hakeas have proven their value in California, but many species remain unknown.

Stenocarpus sinuatus, from Australia, is a Proteaceous tree with evergreen oak-like leaves and striking red, wheel or crown-shaped flowers and tolerates moderate frost.

Embothrium coccineum or "Chilean flame tree" grows well near San Francisco and is just being tried out in this area.

Brachychiton (*Sterculia*) *acerifolium* and *B. discolor* (red and pink flowers respectively), from Australia, are both very showy.

Calliandra Guildingii or "Trinidad flame bush" is fairly hardy. *C. inaequilatera* has larger, rose-coloured flowers and will stand temperatures down to about 27°.

Prostanthera (various species), from Australia, have lavender to violet-coloured trumpet-shaped flowers on moderate-sized to tall shrubs and are very beautiful. They have not had extensive trials in California, but at least one species, *P. nivea* var. *induta,* seems to be growing satisfactorily and is now in bud.

One could enumerate many more desirable plants, but to do so would almost require a book.

In closing, I would like to express again our appreciation for the warm hospitality and the many friendships which we made on our brief visit and for the wealth of new plant material which we were able to collect in the form of seeds to help beautify the California landscape. If we can reciprocate in any way, it will give us pleasure to do so.

A COUNTRY DIARY

Westmoreland, August 14.

Growing in a heap of road rubble among a tangle of scrub and weeds not far from here is a tiny cutting from a tree which some people consider the most remarkable in the world. The baby is about eighteen inches high but already it is straight and sturdy and one day it may become a great forest tree. Its golden leaves are delicately frilled, and the rough, stony patch—the least likely site you could imagine for a great experiment—is crudely fenced in with wire. The tender young sapling, as many of you will have guessed, is a Dawn Redwood, the legendary tree which the scientists said had been extinct for sixty million years or more until the Chinese found one growing in a sacred grove on the bank of a river with an unpronounceable name. Tiny shoots from the seed of the tree which the dinosaurs knew (and probably browsed on) have reached the Lake District and cuttings have been taken in a greenhouse in the heart of the National Park. The young tree I saw has been grown from one of these cuttings and in a plantation less than twenty miles from here there is an experimental half-acre of them. Botanists have known of the Dawn Redwood for many years, for its lovely leaves have been preserved in fossilised form deep down in the rocks throughout aeons of time. Now they know the colour of those leaves, but they can only guess how high the tree, which was thought to be extinct long before history began, will grow. A. H. G.

From *Manchester Guardian,* Aug. 20, 1953

EDITOR'S COMMENTS

The figurative and much maligned spinach has its figurative parallels. Statistical reports may be one of them; but they, too, build good fibres into constructive projects and are necessary at appropriate times. The winter issue of *Lasca Leaves* will, however, have left such behind, and will offer among other papers the following:

Botanical Gardens and Arboretums of the Past and Their Reconstruction, by Frans Verdoorn; *Two Interesting Yuccas from Mexico.* by Wm. Hertrich; *Francesco Franceschi,* by John M. Tucker.

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The International Biohistorical Commission, of the International Union of Biological Sciences (International Council of Scientific Union in coöperation with UNESCO) released, August 21, 1953, report of the *Current Organization and Activities of the Botanical Section. Subsections. Commissions. and Committees* of the International Union of Biological Sciences. The eight multigraphed pages were compiled by C. Skottsberg, President, F. Verdoorn, Retiring Secretary, and J. Lanjouw, Secretary, p.tem. Correspondence concerning the report should be addressed to the Botanical Secretary, p.tem., Professor J. Lanjouw, Botanical Museum, L. Nieuwstraat, Utrecht, Netherlands. Only material concerning the Biohistorical Commission and its Committees should hereafter be sent to Dr. Verdoorn, Waltham 54, Mass., U.S.A.

"Be still, my heart, these great trees are prayers."

RABINDRANATH TAGORE, Stray Birds

NAMES, NOTES, AND NEWS

Cactus and Succulent Society of America, Inc. Fifth Biennial Convention: from July 10th-15th, the Cactus and Succulent Society headquartered its convention in Arcadia, California. The Los Angeles State and County Arboretum, on the Arboretum grounds, was host to the Society, Sunday afternoon, July 12th, 1953.

* * *

Los Angeles County Department of Arboreta and Botanic Gardens: Effective July 1, 1953, the County of Los Angeles Board of Supervisors adopted Ordinance No. 6219, creating the Department of Arboreta and Botanic Gardens, under which is included the administrative charge and maintenance of the Los Angeles State and County Arboretum. This department, subject to the supervision of the County Board of Supervisors, is under the management and control of a Board of Governors. Members of the Board of Trustees of California Arboretum Foundation, Inc., have been appointed as the Board of Governors of the Department of Arboreta and Botanic Gardens. Dr. Samuel Ayres, Jr., has been appointed President of the Board, and Dr. Russell J. Seibert, Director of the Department. California Arboretum Foundation, Inc., is continuing as a non-profit Foundation which, with the cooperation of its membership, functions for the purpose of conducting special horticultural, historical, research, and other educational projects at the Arboretum.

* * *

Arcadia's Golden Jubilee Celebration culminates with a garden party at the Arboretum: during the week of August 10-16, Arcadia celebrated the 50th anniversary of its founding by E. J. "Lucky" Baldwin. As a fitting climax to this historic event, the Arboretum's Historical Preserve was opened on Sunday afternoon, August 16, for "an afternoon affair at the home of 'Lucky' Baldwin," sponsored by the Arcadia Chamber of Commerce. Some 5,000 visitors viewed these grounds, having opportunity of seeing the newly restored Queen Anne Cottage once used by Baldwin as a guest house. This restoration is a recent achievement made possible through private funds raised by the Historical Committee of California Arboretum, Inc., and is authentic in every detail. Other items of attraction during the festive afternoon were: a Tally-Ho driven by six matched blacks; the Baldwin coach-barn; Hugo Reid adobe; a number of marked historical trees. The atmosphere of the occasion was further enhanced by participants in period costume, the Barber Shop Chorus, the company of Sweet Adelines, and the Sierra Madre Band which furnished music throughout the "open house" hours.

* * *

"City at Night" television program eminates from the Arboretum: on Wednesday night, August 12th, KTLA's famous "City at Night" was presented over Channel 5, from the premises and vicinity of Queen Anne Cottage on the Arboretum grounds. Through the excellent assistance of various committees at work on the Arcadia Golden Jubilee, County Supervisor John Anson Ford, and the Arcadia Chamber of Commerce, the Arboretum was able to provide a program of public interest for this widely viewed and popular television feature.

* * *

"Before Your Eyes": a pre-filmed and partially live TV program of station KTTV, featured the Los Angeles State and County Arboretum and the work of the Historical Committee of California Arboretum, Inc., on the night of August 27 over Channel 11. The program consisted of a narrated movie of the Arboretum Grounds, the story of Rancho Santa Anita pictorially told. Mrs. Richard Y. Dakin, co-chairman of the Arboretum's Foundation Historical Committee, spoke of the work done thus far, and the future needs of the Historical Committee in its restoration program.

* * *

Historical Restoration: The Historical Committee of California Arboretum Foundation, Inc., is justly proud of its work in completing the authentic restoration of the Baldwin Queen Anne Cottage; and announces also that the restoration of the garden area surrounding the Cottage is under way, as well as the furnishing of the house itself in authentic period furniture.

* * *

John Francis Douglas: devoted trustee of the Arboretum Foundation passed away November 29, 1952, (*Lasca Leaves*, Winter 1952-53. Vol. III, No. 1). A fitting tribute has been established by the many friends of Mr. Douglas by providing a fund to be known as the John Francis Douglas Memorial Fund of the California Arboretum Foundation, Inc.

* * *

Turf Conference: identical programs to be held Oct. 8, 1953, Horticultural Auditorium Horticultural Building, Univ. of Calif., Davis, Calif.; and Oct. 12, 13, in Los Angeles. For further information, address Dept. of Conferences and Special Activities, Univ. of Calif., Berkeley 4, or Los Angeles 24.

COVER PICTURE

Fragraria chiloensis or Sand Strawberry has adapted itself so satisfactorily to varied situations, both cultivated and semi-wild, that it is not a stranger to most readers of these pages. Dr. Katherine K. Muller describes it briefly and cites its uses in the current article, *White Flowering Native California Plants for Garden Use.* Like good adopted children, this plant from the southern part of our hemisphere, has become so much a part of California's landscape that it is indeed considered a "native daughter," although its first roots were discovered in Lower California and Mexico. The latter fact allows it to be mentioned also among the company of exotics which form the major portion of the flora on the Arboretum grounds.

BOOK REVIEWS and COMMENTS

Audas, James W., *The Australian Bushland*. 1950. An authority on the plants of Australia gives a descriptive account of the flora of that continent.

Francis, W. D., *Australian Rain-Forest Trees*. 1951. A technical account well illustrated with photographs.

Anderson, R. H., *The Trees of New South Wales*. ed. 2. 1947. A well illustrated semi-technical treatment.

Corner, E. J. H., *Wayside Trees* of Malaya. ed. 2. 2 vols. 1952. A general account, including introduced trees, with keys and technical descriptions. Well illustrated with line drawings and photographs.

Blunt, Wilfred, *The Art of Botanical Illustration*. ed. 2. 1951. An historical account of botanical illustration from antiquity to the present.

Woman's Club of Havana, *Flowering Plants from Cuban Gardens*. 1951. A popular account, in English and Spanish, of the conspicuous cultivated plants in Cuba. Illustrated with line drawings.

Jones, Margaret E. and H. F. Clark, *Indoor Plants and Gardens*. The Architectural Press. London. 1952. A non-technical account of the cultivation of indoor plants and their uses in interior decoration.

* * *

Insects—The Yearbook (1952) of Agriculture. 780 pp. 72 color plates. Publ. by U. S. Government Printing Office, Supt. of Documents, Washington, 25, D. C. $2.50.

Anyone interested in and working with plant material can scarcely afford to ignore the factor of insects. The U. S. Department of Agriculture presents this material from the standpoint of acquainting the inquiring reader with knowledge of the incredible number of common insects, and what to do about them with regard to the health of plant life. A comprehensive reference work.

• • •

Flowering Trees of the Caribbean—Bernard and Harriet Pertchik. Rinehart and Company, Inc., 1951. Introduction by William C. White. 30 reproduced paintings. 125 pp. Glossary. Bibliography.

Ample descriptive material to accompany the exotic plant illustrations, and a supplementary listing of folk names in common use in the lands where these plants abound, make of this book not only a thing of beauty but of good reference. The reader who wishes to become acquainted intelligently with flora of the Caribbean will find fine nuggets here, and great stimulus to the imagination.

• • •

Flowering Tropical Trees—1953 catalogue of Edwin A. Menninger, Stuart, Fla. 60 pp. Illus. and indexed. $1.00.

Some 400 different exotic flowering trees are described in this singular catalogue, adequately illustrated. Some of the illustrations have been provided by our own Dr. Samuel Ayres, Jr., President of the Arboretum Board of Trustees. It is called a supplement to the 1947 Menninger catalog; both, it is likely, will become collectors' items among plantsmen of the future. The flowering-tree enthusiast's envy will know no bounds.

• • •

Period Flower Arrangement by Margaret Fairbanks Marcus, M. Barrows and Company, Inc., New York, 1952.

This volume, based on the abundant source materials available from every famous period of decorative style, draws on every art form, and is profusely and richly ilustrated. It is not only a studious record of floral traditions and uses, but is also a testimony to the vital pleasure that human beings throughout history have found in the earth's great gifts of flowers and fragrance. From studies and travel Mrs. Marcus has prepared a history which shows flower arrangement as a practice continuous from the times of the tomb paintings of the Nile Valley to the modern salon in fashion with the sophisticated delicacies of a Calder mobile.

To support this view of the continuity of floral traditions Mrs. Marcus has gathered her evidence from most of civilization's great era's of fine living and attendant arts. She includes as well religious, seasonal and ceremonial symbolism. Society's long use of flowers in many ways is shown against the authentic background of arts and crafts that have enriched domestic interiors. The author has tried, wherever possible, to show "flowers in vases in a living environment." The domestic settings thus suggested are for the most part those of elegance and position. Poets may be satisfied with what they can get of beauty and universal meaning from one flower in one cranny, and the Japanese have combined deep symbolism with austerity, but the student of historic flower arrangement has in this volumn a lavish treasury of brillance, grace and invention on which to draw.

The informed and cultivated arranger should be able to move from period to period without confusion of manner or spirit, must not, for example, make the dull mistake of over-looking the serious distinctions between the Chinese and the Japanese, or, if working in the eighteenth-century moods, must know the proper differences in feeling and emphasis between the French, English Georgian and American Colonial. This delightful minor art, so perishable and evanescent in its materials, must have the same concerns for taste and skill that pertain in all art, the discarding of mistakes, the same hope for rightness. Like any other art it can be enriched by modern ideas of form and use. To give human delight, human solace, to add to human ceremonies and symbolism a special kind of delicacy and faith, certainly one may say the race of flowers has given us an art with an historic past. Mrs. Marcus predicts for it a sound future.

HILDEGARDE FLANNER, Altadena, Calif.

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Lasca Leaves

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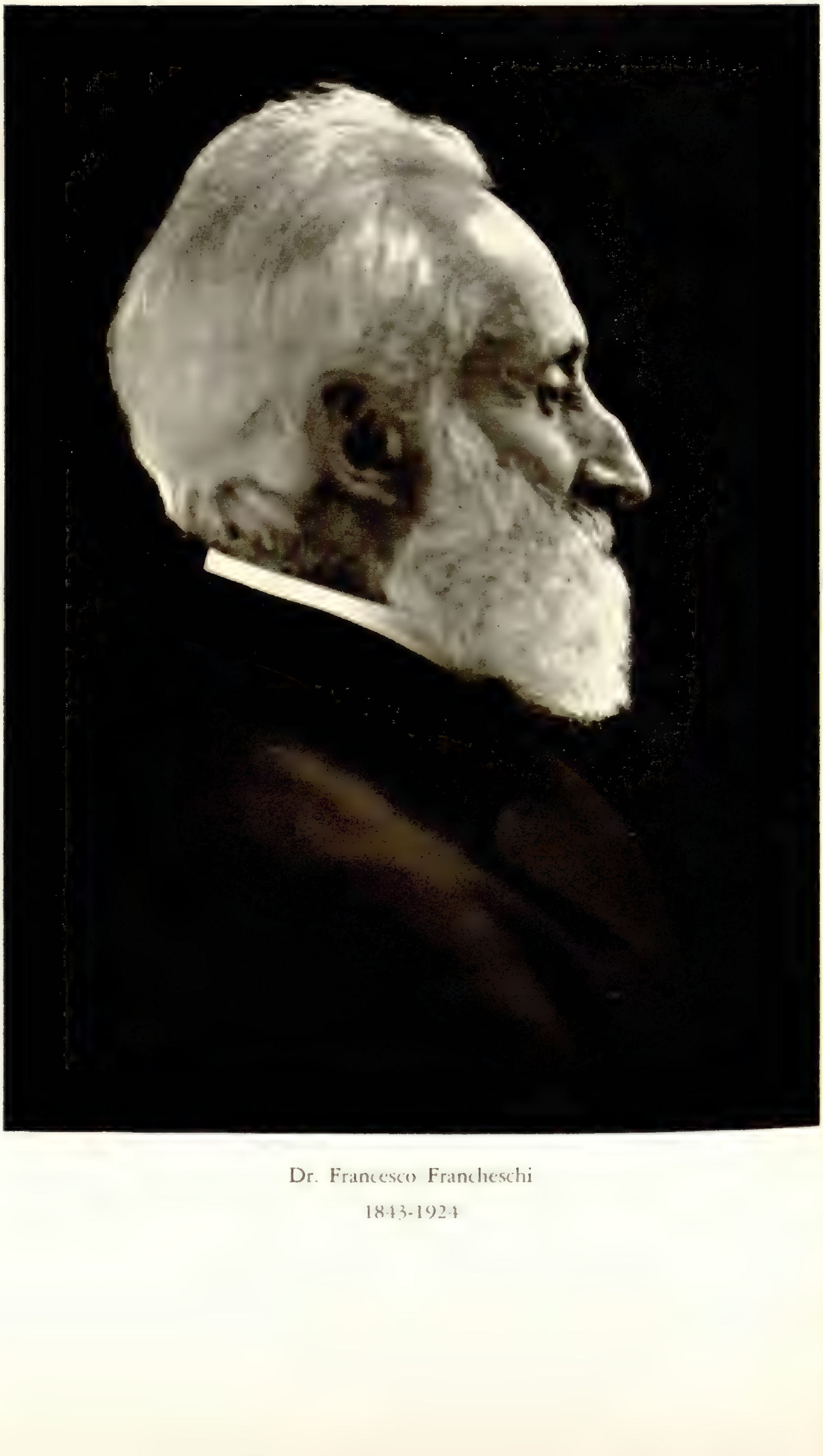

Dr. Francesco Francheschi

1843-1924

FRANCESCO FRANCESCHI

JOHN M. TUCKER

THIS paper is a brief account of the life and work of the man who stands out above all others in the history of horticulture in southern California—Dr. Emanuele Orazio Fenzi, known to his associates in this country in later life as Dr. Francesco Franceschi. In gathering data I drew upon a number of sources, and take this opportunity to express my appreciation to the following persons for the assistance they have given me: to Dr. Emily O. Lamb, who lived with the Fenzis at Santa Barbara as a member of the family for fourteen years, to Mr. Peter Riedel and to Mr. H. M. Butterfield, for much of the information contained in the following pages; to Mr. Butterfield, Miss Annetta Carter, and Mr. M. Van Rensselaer, for the loan of horticultural catalogues and journals—sources of much valuable data; to Dr. H. L. Mason, for placing at my disposal a collection of Franceschi's business correspondence (a fund of information of which I have scarcely scratched the surface), and to Dr. Howard S. Reed, for guiding my efforts in preparing this paper. Particularly informative also, were the following two articles: "Una gloria dell'orticoltura italiana. Il Dott. Emanuele Orazio Fenzi," by Mario Calvino—(L'Argricoltura Coloniale, 22: 122-128. 1928.) and "Dr. Fenzi's Contributions to American Horticulture," by F. W. Popenoe (Journ. Hered. 13: 215-220. 1922.).

Emanuele Orazio Fenzi was born March 12, 1843, in Florence, Italy. His grandfather was a very wealthy banker of that city and a senator, a man of an aggressive dominating personality. The Fenzi family were patrons of the arts and sciences, and followed the latest developments in these fields with great interest. The renowned pianist, Anton Rubinstein, was a friend of the family, and on his visits to Florence, used to come to their home to practice, because their piano was the finest in the city. Thus, the background of young Fenzi was one of culture and wealth, with its attendant advantages.

In early youth he lost his parents, and his grandfather took it upon himself to see that he was properly educated. The grandfather, seeing his young charge as a future man of affairs, sent him to the University of Pisa to study law. Although he would far rather have studied botany, he complied with his grandfather's wishes and in 1864 received the degree of Doctor of Laws.

After leaving the university, he turned to botanical and horticultural pursuits, despite the fact that his grandfather wanted him to start upon a business career. Endowed with a large estate which made him financially independent, he was able to indulge his tastes as he chose in the years that followed. At his country place near Florence, he formed an arboretum of rare trees, and on the estate of a relative near Rome, he assembled a large collection of plants from countries all over the world. He was the first to introduce bamboos to Italy; *Genista monosperma* was another of his introductions. He did considerable work in the improvement of grape and olive culture in Italy, and frequently contributed horticultural and botanical articles, not only to Italian periodicals, but to the English journal, "The Gardener's Chronicle," as well. Fenzi travelled a great deal, and at one time or another visited all the principal botanical gardens of Europe. In May, 1874, he served as secretary of the International Agricultural Exposition at Florence and edited its catalogue. Shortly thereafter, he became the first secretary of the Royal Tuscan Society of Horticulture, an organization of which he was later president.

His activities in later years were not confined to the fields of horticulture and agriculture, however. When his grandfather died, he took charge of the affairs of the bank and, in addition, managed an estate. He was instrumental in establishing an electric tram line to Fiesole, the first in Italy, and the steam lines at San Casciano and Greve. But he had so little enthusiasm for business, that he soon turned over the management of the bank to a cousin. Then, during the economic crisis of 1889-90 Fenzi was forced to close the bank. In order to settle accounts with its creditors he found it necessary to liquidate virtually everything he owned, so that, finally, he and his family were left with only a very small fraction of their once large fortune.

Because of his losses, he was no longer hampered by a multitude of business matters, and saw a chance to put his interest in plants to work. His ambition was to gather together in one area plants from countries all around the globe. He decided to go to southern California because the climate was well suited to his purpose. So, in 1893, he came to Los Angeles, his wife and family remaining in Italy. He was in California six years before they joined him. From a strong feeling of family pride he dropped the surname, Fenzi, lest the stigma of his bank failure follow him to America, and adopted in its place a family name, Franceschi. During the twenty years he spent in California, he was known to all but his intimates, as Dr. Francesco Franceschi. In Los Angeles, he met J. C. Harvey, the elder Mr. Howard, E. D. Sturtevant, and other horticulturists and nurserymen. He remained there only a year, however, before he moved to Santa Barbara where he entered into partnership with C. F. Eaton in raising nursery stock. After a short time, the

partnership was dissolved and Franceschi started a nursery business of his own, calling his organization the Southern California Acclimatizing Association.

To obtain new species he wrote to botanical gardens, collectors, and plantsmen in all parts of the world, and soon developed an extensive correspondence. Here the unusual linguistic ability Franceschi possessed stood him in good stead, for he read, wrote and spoke not only his native Italian, but also English, German, French, Spanish, and modern and ancient Hebrew.

Yet his interest was far from being confined to exotics. He was ever on the lookout for any elements of the native flora that might possess striking ornamental qualities. Indeed, in November, 1894, having been in Santa Barbara less than a year, he made a week's trip to Santa Cruz Island, the largest of the Santa Barbara Channel Islands. While there he obtained seeds of several different species which were at that time unknown in the horticultural trade. The most noteworthy of these was *Lyonothamnus floribundus* var. *asplenifolius*, the Santa Cruz Island ironwood. Unable to find any seedlings of this tree, he laboriously dug up a living stump and gathered some seed. With considerable difficulty, he managed to carry his prize back to camp, and on his return to the mainland planted it in his lathhouse in Montecito, a few miles from Santa Barbara. In five or six months it had started to sprout. The next year, when he moved his nursery to Santa Barbara, he transplanted it to his new location where, in a few years, it developed into a fine tree. From the seed, Franceschi obtained several trees, one of which is the fine specimen to be seen today in the grounds of the old botanical garden north of the library, on the campus of the University of California at Berkeley.

He had been in Santa Barbara only a year, when, in 1895, he published a small book entitled, "Santa Barbara Exotic Flora." This book contains a good deal of meteorological and climatic data, and observations on the soil and native flora of the region. It includes notes on the history of plant introduction in the region, and mentions the two oldest introduced trees of the town, *Casimiroa edulis*, the White Sapote, and *Prunus Capuli*, the Capulin Cherry, both natives of Mexico. This volume gives an apparently comprehensive review of the exotic plants then cultivated in Santa Barbara and evidences the keenness of Franceschi's observations, and the breadth of his botanical knowledge.

David Fairchild, in his recent book, "The World Was My Garden," tells of meeting Franceschi at Santa Barbara in 1898. He speaks of Franceschi's enthusiasm in the following words: "Santa Barbara in 1898 was but a simple, small town. Residents of the beautiful hillside villas today would not credit their eyes could they visualize the bare, sparsely settled roads where I drove with Dr. Franceschi. . . . Santa Barbara was so undeveloped that I considered him visionary and over-optimistic. However, he foresaw the future more clearly than I, and lived to see Santa Barbara become a great winter resort containing hundreds of beautiful villas like those on the Riviera." Fairchild, at that time with the United States Bureau of Plant Industry, was impressed with the work Franceschi was doing, and had numerous new plant introductions of the Bureau sent to him from time to time for trial in Santa Barbara.

In 1904 Franceschi acquired forty acres of land on Mission Ridge, at that time a dry, barrent hillside entirely outside the bounds of the city. Here he built the house in which he lived until he left Santa Barbara, a place he named "Montarioso." He established another nursery here, and, in order to have an ample water supply, built a small reservoir near the top of the hill. A perusal of his business correspondence leaves one with the impression that he was not blessed with much financial success during the following years. In June, 1904, his propagating house burned and he appears to have been considerably in debt in the months that followed. In 1907 he went into partnership with Mr. Peter Riedel, and incorporated the Southern California Acclimatizing Association, hoping thereby to be relieved of some of the burden of routine business matters. This arrangement did not work out well, however, and after little more than a year, in 1909, they decided to dissolve their partnership. Following this incident, Franceschi continued his business independently on Mission Ridge, calling it the Montarioso Nursery. By offering his services in landscaping and maintenance of the grounds of a number of estates in Montecito, he was able to bolster his income. However, the continued cost of introducing new plants, a work Franceschi carried on despite his reverses, and the limited demand for his exotic rarities, made financial disaster inevitable.

It is not surprising, therefore, that upon receiving an offer from the Italian government in 1912, to take a post in the African colony of Libya, he decided to accept. He was to introduce new plants having agricultural and horticultural value, and to do what he could to develop agriculture in the colony, the government furnishing the land and facilities for his introduction grounds. Accordingly, on July 21, 1913, he bade farewell to Santa Barbara, and with his wife and daughters, started out for his native Italy. His two sons remained in California, the older carrying on the business as manager of the Montarioso Nursery. For the next year and a half, Franceschi lived in seclusion on the Italian Riviera, preparing the manuscript of a book, "Frutti Tropicali e Semi-Tropicali," which was published at Florence in 1915. A short time later, he made a reconnaisance trip to Libya, accompanied by his nephew, Guido Corsini, and in February, 1915, laid out his establishment in the city of Tripoli. Thus, at an age when most men would have been long since retired, Franceschi, at 72, was setting out on a

Dr. Francheschi's residence today

fresh venture. He held this post for several years, and then retired to carry on the same work at his own expense.

In 1922, he was awarded the third Meyer Memorial Medal by the council of the American Genetic Association. This is a medal presented periodically to persons who have accomplished outstanding work in introducing plants to American horticulture. The medal was sent to Tripoli, in 1923, by the governor, Count Volpi.

Francheschi continued his literary activity to the end of his life, contributing articles on agriculture in Tripoli to the Italian journal, "L'Agricoltura Coloniale." He died in Tripoli on November 5, 1924, at the age of 81. Franceschi's oldest daughter has carried on his work in Tripoli, and today maintains a successful nursery there. She, apparently, had, in addition to a deep interest in things botanical, considerable business acumen. Probably the most important accomplishment of the two in Tripoli, has been the importation and propagation of large numbers of eucalyptus trees of various species.

Horticultural Achievements

During the years that he lived in Santa Barbara, Franceschi wrote numerous articles for the local newspaper, and was a regular contributor to such journals as "Pacific Garden" and "Rural California." He did much toward developing an appreciation of the beauty, as well as the economic value of the large number of ornamental plants and tropical and subtropical fruits that could be grown in the region. His reputation spread throughout horticultural circles in this country, and every botanist or plantsman who visited Santa Barbara, was certain to pay him a call to see his collection of rare plants. The esteem in which his judgment and opinions were held is shown by the frequency with which he is quoted in the literature of tropical and subtropical plants.

Among the multitude of new plants that he brought to the gardens of Santa Barbara, the following are some best suited to the climate there. A number of these have attained the popularity they deserve, although some, none the less fine ornamentals, are still rather rare.

Acacia obliqua
Acacia podalyriaefolia
Aglaia odorata
Aleurites Fordii
Alöe Salm-Dyckiana
Anthyllis Barba-Jovis
Asparagus decumbens
Asparagus scandens var. deflexus
Bauhinia grandiflora
Bauhinia tomentosa
Bauhinia variegata
Benthamia fragifera
Bocconia frutescens
Buddleia madagascariensis
Carica quercifolia
Convolvulus florida
Dioclea glycinoides
Dombeya natalensis
Dombeya punctata
Erythrina tomentosa
Eugenia edulis
Feijoa Sellowiana
Ficus altissima
Ficus infectoria

Ficus retusa
Genista monosperma
Harpephyllum caffrum
Hibiscus heterophyllus
Jasminum simplicifolium
Lippia repens
Lithraea Gilliesii
Lyonothamnus floribundus var. asplenifolius
Metrosideros tomentosum
Myoporum acuminatum
Myoporum tomentosum
Pithecoctenium clematidium
Pithecoctenium muricatum
Pittosporum heterophyllum
Pittosporum rhombifolium
Pittosporum viridiflorum
Psidium lucidum
Rhynchosia minima
Schinus terebinthifolius
Schotia latifolia
Solanum Guatemalense
Sterculia discolor
Stigmaphyllon littorale
Taxodium mucronatum
Tecoma garrocha
Tipuana speciosa
Tricuspidaria dependens
Vitis capensis

Of all the new plants Franceschi introduced, none has become better known than *Lippia repens*. Its popularity is probably due in large part to the publicity given it by Franceschi, but the importance he attached to this particular introduction appears to have been based on an erroneous idea that he held. In 1904, in an article that he wrote for the Los Angeles Times, Franceschi states that he first introduced this species from Italy in 1898. He says: "From the Director of the Botanic Garden in Rome I obtained by mail a small tin box of *Lippia* plants, less than 12 ounces weight. Now, after six years, there are hundreds and hundreds of acres planted with *Lippia* between California, Arizona, Mexico and Australia, and it all came out of that small tin box. . . ."

In contrast to this remarkable statement, H. N. Moldenke, an authority on the Verbenaceae, in a personal communication of May 26, 1941, makes the following comment: "You can be very sure that the plants (of "*Lippia repens*") of Texas, New Mexico, and Arizona, and central, eastern, and southern United States have nothing to do with the plants introduced into California by Franceschi, but it is my belief that most of those of southern California (at least all that I have seen so far) are descendants of the ones he introduced."

The efforts Franceschi made to secure new plants, to make certain of their identity, and to obtain accurate information regarding their culture and optimum growth conditions, were often great, and show a truly scientific spirit. Scattered throughout his correspondence are letters to and from such well-known botanists as Joseph Burtt-Davy, William Trelease, J. H. Maiden of Australia, Charles Sprague Sargent, Harvey Monroe Hall, Miss Alice Eastwood, and T. S. Brandegee, requesting and receiving identifications of specimens which he had submitted. As another illustration, his letter of October 30, 1908, to Mr. C. Wercklé at San Jose de Costa Rica, might be cited. Wercklé was the discoverer of *Hidalgoa Werckeleii*, the "Climbing Dahlia," which Franceschi had introduced at Santa Barbara. Having had difficulty in bringing it to flower, we find him, in this letter, requesting information regarding its mode of growth and climatic requirements from the man who, logically, would know most about such matters—its discoverer. This thoroughness was typical of Franceschi.

A good example of his persistence and determination in effecting the introduction of a desirable species, is the case of *Taxodium mucronatum*, the "Montezuma Cypress." Franceschi had often seen the tree in the Botanic Garden at Naples, planted by Tenore, the botanist who described the species, and its beauty had made a lasting impression upon him. In 1898 he decided to obtain seeds and try it out in Santa Barbara, and accordingly, sent to Naples for seed, which failed to germinate. Year after year, seeds from there and elsewhere persistently refused to germinate, but at last, in 1908, after ten years of failure, his patience was rewarded. Through his friend, Professor C. Conzatti of Oaxaca, he obtained, from the Federal Park at Chapultepec, Mexico, seeds which, much to his gratification, germinated successfully. Today, many fine trees grown from these seeds may be seen in the parks and gardens of Santa Barbara.

The culture of tropical and subtropical table fruits was a subject of special interest to Franceschi. He carried on much correspondence on aspects of this subject with men of the United States Bureau of Plant Industry, and horticulturists and fruit growers (the Popenoes of Altadena, California, particularly), throughout the warmer parts of this country and of many foreign countries. He introduced several new species of *Anona*, and from a superior tree of *A. Cherimola* growing in Altadena, he raised plants in 1910 which he subsequently sent out under the name of *A. Cherimola mammillaris*. His best known fruit introduction was the "Pineapple Guava," *Feijoa Sellowiana*. This he introduced in 1901, obtaining seeds from France, where it had been introduced previously from its native South America. Although it was given much publicity at the time, *Feijoa* has not gained the popularity that Franceschi had hoped for it, and certainly has not attained any economic importance as a fruit in southern California.

Of much greater consequence in this field, however, were the frequent articles he wrote for newspapers and horticultural journals. His book, "Frutti Tropicali e Semi-tropicali," probably embodies the findings of his long years of experience in this field. It is a work of some 260 pages, contains numerous illustrations, and descriptions of 727 species. The majority of these descriptions are rather brief, although for those which are of more economic importance he gives much more detailed information. An English translation of this book from the Italian would be a real contribution to the literature of subtropical horticulture in this country.

The total number of different kinds of plants that Franceschi grew during his stay in Santa Barbara has not yet been fully worked out.

Among the miscellaneous papers in the collection of his business correspondence, stored at the Herbarium of the University of California, is a typewritten list of plant names, contained on 114 sheets, with the following inscription pencilled on the first sheet: "List of Seeds and Plants Tried Out in Santa Barbara, California, by Dr. F. Franceschi." The number of genera is approximately 796, of species, varieties, and horticultural forms, approximately 2,129. Exactly what significance may be attached to this list is a questionable matter, however. There is nothing to indicate who compiled it or when this was done. It appears to have been prepared without the exercise of very much care, and in no case is information given as to the results of the trial introductions.

The total number of his new plant introductions is a debatable matter. In the catalogues of the Southern California Acclimatizing Association which he published at irregular intervals, and later, in the price lists of the Montarioso Nursery, he points out the plants that he claims were first offered by him in the horticultural trade in this country. The total number of these—species, varieties, and horticultural forms—mentioned in his catalogues and price lists from 1896 to 1914 (see bibliography) reaches nearly 900.

These claims, however, cannot all be accepted at their face value. There are occasional instances where species that he claimed to have introduced ("plants first offered by us in the United States") can be shown actually to have been offered by nurserymen prior to his coming to California. A single example is *Phoenix canariensis*, the "Canary Island Date Palm." Franceschi, in his "Condensed Catalogue and Price List" for 1908, indicates that this species was one of his introductions, but, according to Mr. H. M. Butterfield this palm was offered by John Rock at San Jose as early as 1877. Moreover, the lack of consistency with regard to some of his claims, in catalogues of different years, casts a shadow of doubt on their validity. For instance, in his catalogue for 1908, he claims to have been the first in this country to offer the following species (among numerous others): *Cinnamomum Camphora*, *Euphorbia pulcherrima*, *Leucadendron argenteum*, *Magnolia grandiflora*, and *Persea gratissima*. In his catalogues for the years 1896, 1897, and 1900, however, he does not make this claim for any of these species, although they are all listed. However, the number of errors of this sort is probably small, although a careful check of his catalogues against earlier horticultural literature is necessary before their extent can be ascertained.

After making due allowances for these errors, the remainder is still truly remarkable. F. W. Popenoe, said of his work (Journal of Heredity, 13: 215, 1922) "His introductions are more numerous than those of any one man (in the United States), and many of them are now widely grown in the land of their adoption."

No evaluation of Dr. Franceschi's contributions to horticulture in this country would be complete without a consideration of the influence of his personality on those of his contemporaries with whom he came in contact. His wealth of horticultural and botanical knowledge, gained from years of travel, observation, and practical work, coupled with his untiring interest in plants, were a constant source of inspiration to plant lovers wherever he went.

The plants he introduced stand as living reminders of his untiring work, and his memory will long be perpetuated at Santa Barbara in his old home, "Montarioso," which today is a city park, named in his honor, "Franceschi Park."

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BROMELIADS FOR THE SOUTHERN CALIFORNIA GARDEN

VICTORIA PADILLA

Aechmea Cross: *Ae. calyculata* x *miniata*
Glossy maroon leaves, vivid red bract.

FOR THE GARDENER always avid in his search for interesting plant materials, the fascinating bromeliad or pineapple family offers many tempting species with which to experiment. As bromeliads are indigenous to the American tropics, where for the most part they are epiphytic in habit, they have been considered chiefly as indoor plants, but Southern California gardeners are now beginning to find many varieties which will thrive outside despite the often unfavorable weather conditions.

The outstanding outdoor planting of bromeliads in the West is that at the Huntington Botanical Gardens. Here are featured the xerophytic types of bromeliads—those which dwell in the sun and can withstand months of drought. These Dyckias, Hechtias, Puyas, and Bromelias during the spring and summer months add great beauty to the garden with their colorful spikes of various sizes and shapes in red, yellow, orange, blue, and green. With the exception of the Dyckias, most of these bromeliads are too large for the average home garden, but where one has room, on a dry sunny bank or in a cactus collection, they will add a definitely dramatic touch.

The smaller Dyckias can successfully be grown in among succulents or in a well-drained rockery. *D. rariflora, D. remotiflora,* and *D. brevifolia,* which all form clusters of small rosettes of leaves, bear yellow or orange flowers on spikes of one to two feet in height.

Special mention should be made of *Puya Berteroniana,* known in the nursery trade as *Puya alpestris,* a stunning plant with its three-foot stalk of metallic greenish-blue flowers. Clumps of this Puya never reach the size of others of its genus and it can easily be kept under control. There is a dwarf variety, and it is hoped that commercial growers will attempt to propagate it, as it will be a definite contribution to the smaller garden.

Visitors to the U. C. L. A. Botanical

Gardens last summer were overwhelmed with the magnificent display of *Bromelia balansae* in flower. These bromeliads, having the appearance of large pineapple plants, are useful as mountainside plants, as accent notes in the cactus garden, or as barriers on the property line. Its two to three-foot leaves being armed with vicious teeth, this plant would prevent the encroachment of both man and beast. Known as the "Heart of Flame" *Bromelia balansae* in bloom is a sight long to remember. When about to flower the center terminal leaves start turning a brilliant red, which color increases in perimeter and intensity until from the center emerges a massive white head covered with many small but beautiful maroon and white flowers and flaming red spears which are the inflorescence bracts. Definitely, *Bromelia balansae* is a plant to stop traffic.

The variegated form of this Bromelia is extremely handsome. The green and white variegation on the spiny pineapple-like leaves has a flush of pink at all times. As it is not quite so robust a grower as the plain-leaved variety, it can be used to greater extent in the average-sized garden.

There are many bromeliads well adapted to the small garden which have proved to be hardy except under conditions of extreme prolonged frost. They practically all will endure a drop in the temperature to twenty-five degrees. For the most part these bromeliads all prefer a little protection, filtered light, and a loose, porous soil. To bring out the full beauty of their leaf coloring and markings, one should never plant them in intense shade.

Everyone is familiar with the ubiquitous *Billbergia nutans*, which can become a veritable pest if left untended. There are innumerable other varieties of Billbergias, however, which are equally as hardy and floriferous, but considerably more beautiful. The largest of the Billbergias and by far the most striking is *B. porteana*. The blackish green leaves, lightly banded with grey, form a stiff tubular vase over two feet high, out of which hangs the pendant flower stalk. From brilliant rose bracts droops the large flower head, the mealy whiteness of the spike combining with the green and blue flowers to give a most unusual effect.

Another favorite Billbergia is the one known as *Mead Hybrid*. From soft green leaves droops its large pink bract, through which emerge the blue and green flowers. The popularity of this variety is due not only to the luxuriance of its growth and the beauty of its bloom, but to its ever-blooming qualities and the length of time the bract stays in color. *B. thysoidea* and its numerous hybrids are among the most colorful of the tribe, the brilliant red flowers being produced in erect clusters above stiff, broad foliage.

There are many uses in the garden for Billbergias, besides relegating them to dark corners where nothing else will grow. Plant as an accent note by a pool the tall supple-leaved *B. Elvenia Slosson* with its graceful, hanging spikes. Tuck into corners of the rockery a *B. vittata* or *B. Saundersii,* always gay with bizarre markings. Wrap a bit of moss around *B. Mead Hybrid* or *B. Euphemiae* and let them droop from a crotch in a tree. Plant the red leaved *B. amoena* as a bright note among a planting of ferns, and use *B. porteana* in with tropicals where a bold effect is desired.

Although Aechmeas are usually thought of as plants for indoor culture, there are a number which will do well in the open garden. They are generally preferred to Billbergias because of the great length of time they stay in bloom. Generally speaking, the heavier textured and more rigid the leaves, the better the Aechmea will withstand the rigors of the out-of-doors. *Aechmea caudata variegata,* with its three-foot leaves informally striped with cream and green, is the most handsome of the robust varieties. It will grow in the darkest doorway as well as tolerate considerable sunlight. It is especially attractive when in bloom, the erect inflorescence forming a pyramidal panicle of beautiful orange-yellow flowers, which is in color for many months. This Aechmea makes an excellent accent plant—always gay yet always dignified and neat.

Aechmea bracteata is another hardy va-

Tillandsia dasyliriifolia growing on Royal Poinciana Tree, Michiocan, Mexico.

riety with leaves up to three feet and a flower stalk of brilliant red growing to six feet. It thrives in full sun and can be used effectively in clumps in the sunny border or in the lawn. It will stand a few degrees of frost. *Aechmea distichantha* is another of this group, having rosettes of stiff, glaucous green foliage resembling a small Century Plant. The six-inch inflorescence of dark violet emanating from reddish bracts remains in color for a considerable time.

There are many of the smaller Aechmeas which can be used as border plants, as rockery subjects, or as specimens growing in small clusters. Plants recommended for this purpose are *A. nudicaulis*, with stiff dark green leaves and a brilliant flower spike of red and yellow; *A. fasciata*, with grey leaves softly banded with white and a pink and blue flower head; *A. calvculata*, with bright green foliage and cone of bright yellow flowers; *A. coelistis*, with stiff green leaves and a flower head of blue; and *A. fulgens discolor*, with its purple and green leaves and startling berry head of red.

For unusual leaf mottling, the bromeliad known as *Neoregelia marmorata* is unsurpassed. It requires plenty of light and air to attain its full beauty and will take considerable cold. A smallish plant, with its green leaves heavily blotched with violet carmine, it is ideal for rock gardens. Equally as hardy and effective is *Neoregelia spectabilis*, the "finger-nail plant," with its soft grey-green leaves tipped with red.

For those gardeners who like to grow plants on their trees, the Tillandsia offers a challenge. While most Tillandsias will not take kindly to much frost, many varieties are growing out of doors here in the South. As they cling to the topmost branches of trees in their native habitat, they desire much light and air and little if

any soil. Their thin, soft grey leaves are covered with peltate scales, though which they absorb their necessary moisture and nutriment. What roots they have are merely for anchorage purposes.

Tillandsia fasciculata, fourteen inches in height with a flower pike of twenty inches, is an imposing plant which is being grown successfully out of doors here in sheltered sections. Its inflorescence of brilliant red bracts supporting deep purple flowers is extremely colorful. Other Tillandsias which have survived mild frosts are the interesting ball-shaped *T. exserta* from northern Mexico, the tiny pretty *T. ionantha*, which blushes when it is ready to bloom, *T. utriculata* from Florida and *T. tenuifolia*.

It is very likely that there are many other types of bromeliads which will grow successfully out of doors in Southern California—it only remains for some intrepid gardener to do a little experimenting. However, members of the Bromeliad family are being used more and more in landscape design, and it probably will not be long before they are accepted as good garden subjects for the Southland.

TWO INTERESTING YUCCAS FROM MEXICO

WILLIAM HERTRICH

INCLUDED in the xerophyte collection of the Huntington Botanical Gardens, San Marino, California, about 120 Yucca plants are growing, embracing some 30 species, and as many more varieties. Most of these are indigenous to southwestern United States, some along the southeastern coastal states, and others from south of the border in Mexico.

Practically all Yuccas adapt themselves very readily to climatic conditions prevailing in southern California. The species range in size from the 24" *Y. temuistyla* to the giant *Y. australis* from Mexico which attains tree-size proportions—i.e. 40 ft. or more in height, with proportionate top.

Most Yuccas respond to the same cultural treatment that successfully develops other plants. Some species, however, if planted in soil over-rich in plant nourishment, and provided with more than adequate water, grow too rapidly, becoming top-heavy. This condition causes them to bend over in wide arch form; in some instances they bend low enough to make contact with the ground and to take root at points of contact. This curious habit has been particularly manifest in one specimen of *Y. valida* in the Huntington Gardens which in 1925 was planted as a small plant in its present location.

Prior to 1925, the area in these gardens

Yucca valida, close-up of flowering stalk.

where the Yuccas are now growing was a large reservoir used for storing water for irrigation purposes. Subdivision of adjacent land for homesites made the reservoir obsolete; it was filled in with soil and became the foundation of what is now part of the cactus garden. The top soil used was

Yucca valida showing wide arching of trunk and upright terminals.

ideal as a medium for good plant growth, and as a matter of fact proved too rich for certain plants placed there, as was the case with this one *Y. valida*. It put on more than ordinary growth for such a plant in a given time, and after being established for a few years in its new location, formed several trunks, the first of which produced its first flower spikes in 1935. Blooming each successive year in increased number of blooms, it produced in July and August of this year, 1953, 39 inflorescences ranging in size from 15″ to 20″ in height, on stems up to 14′ tall. Through the years, the stem terminals, after the blooming period, have branched and re-branched, forming multiple heads in time which have become increasingly large and heavy to the point mentioned above—of bending the trunk slowly to form an arch and ultimately bending far enough to make contact with the ground. At these points of contact roots have formed, establishing new plants severed from the parent plants.

One especially interesting factor connected with the arching of these stems is the breaking of new terminals on the upper side of the arched trunk. This feature has been noted on only one other species—*Y. australis*: it occurs in exactly the same manner except that the species *australis* did not bend far enough to make the contact with the ground. The two species, *Y. valida* and *Y. australis* are similar in some aspects of appearance as well as growth; *Y. valida*, however, has shorter leaves, does not grow as tall as *Y. australis*, and bears its inflorescences in upright position, while *Y. australis* produces leaves 18″ to 24″ long, forms trunks that are heavy, and excessively swollen-appearing bases, besides bearing pendant inflorescences from 3′to 6′ long.

Of the 39 flower spikes produced on the large specimen of *Y. valida* this year, 18 were produced on terminals of self-layered stems, of which 5 are rooted and 3 not yet rooted. The total number of terminals of all sizes was 190. The approximate spread

of the plant, east to west, this summer of 1953, was 37 ft.; approximate spread north to south, 35 ft.

The two species of Yucca under consideration here are both indigenous to Mexico; however, *Y. valida* is found in Lower California and northeastern Mexico but *Y. australis* only in northeastern Mexico. Both species are commendable as ornamental plants of a bold nature, and will do well in almost any locality in southern California including the warm dry interior valleys.

Two photographs, habitat and close-up, showing the pendulous nature of the inflorescence of *Yucca australis*, contrasted with the upright inflorescence of *Yucca valida*, (cf. photograph, p. 11). In the Huntington Gardens, from a certain vantage point the pendant flowering species is a tall accent behind the sprawling, wide-arching *Y. valida*.

GARDENING WITH WOODY PLANTS

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GARDENING with woody plants is the ideal solution for the person with limited space and leisure. It makes the least demand on time and therefore is the type most in keeping with the tempo of life and economic conditions of the present era. The existence of a definite trend in this direction is shown by the fact that we have scarcely any nurseries which specialize in perennials in Southern California. The present discussion is an attempt to evaluate some of the problems and opportunities of this type of planting.

Unquestionably in the usual landscape plan, trees are often by far the most important element. The matter of selection, maintenance, and pruning thus becomes doubly important. With the trend in Southern California toward the very low one story dwelling with little or no foundation, a great many trees are being badly selected, the most common mistake being to plant trees which are entirely out of scale for the immediate surroundings. Familiar examples are the use of Lombardy poplars and deodar cedars close to low houses. These are both lovely in good specimens but all too often completely destroy all scale and proportion and injure greatly the appearance and apparent value of the property. Those who remember the Tony Sarg marionettes of a half generation age remember that during the performance the small stage gave an illusion of a size near normal because there was no standard of comparison nearby. However, at the end of the performance when Mr. Sarg appeared on the stage holding the hand of one of his marionettes, the illusion was completely destroyed. The stage and marionettes changed at once into a completely different miniature world.

One of the greatest needs in our planting is for small or moderate sized trees which will hold their form and size for long periods of time. Likewise in shrubs, some of our finest materials are the refined, rather slow growing things, which usually are somewhat more expensive, because they take more time for the nurseryman to produce.

Trees and shrubs in addition to height both have equally important dimension, that of spread or the width which is attained in a certain period of time. It is interesting that catalogs frequently list the height of plants but all too frequently neglect to mention the equally important feature of spread of width. One of the commonest mistakes in planting is crowding. It can be seen in the spacing of street trees in many of the metropolitan areas in the vicinity of Los Angeles. In some cases, every other tree could be removed with actual improvement.

A friend of mine in landscape work once had the experience of completing a large job. After it was completed the client decided that the planting was too sparse and decided to purchase one additional plant of the entire planting list. All of these plants were then interplanted in the original planting plan to the great dismay of the landscape architect!

Crowding of plants destroys all beauty of natural form. While some of the ill effects can be overcome by pruning, in many instances this is insufficient to overcome an unwise spacing of the plants in the original planting.

Many years ago the firm of Marshall Field in Chicago became famous for its window displays and the decorator in charge was reputed to receive a fabulous salary. When a person once remarked to him that his was a sinecure in merely placing a few things in a window each week, he replied that he was being paid mainly to keep out of his windows the things which other stores were putting in their displays.

A study of the displays of any of the better stores will always reveal comparatively few items of high quality merchandise well spaced to direct attention to the important features. Compare the effect with the cluttered store windows in the cheaper districts where an attempt is made to display the entire merchandise of the store in the window. Exactly the same principles hold in landscape planting.

We believe that some adventurousness is justified in using tender plants for some of the smaller minor elements of the planting. Even if the tops are frosted once each decade or even if the plants are lost entirely, the landscape effect is lost only for a very short period of time. However, with trees the situation is entirely different. Valuable years of the development of plants may be lost, years which never can be made up except by the planting of extremely expensive boxed specimens. Sometimes these large speimen trees have had a considerable shock to the roots and take a long time before they really become established and begin to grow well. For this reason, we would strongly advise that experimentation with very tender trees be limited to those gardeners located in consistently mild and protected locations or to those who have large areas where a certain number of plants can be sacrificed at any time without any serious destruction of the total effect.

In close proximity to structures, some attention should be given to safety. Some of the

eucalypts, acacias, jacarandas, and others, have notoriously weak wood which can easily be broken in storms. We have all seen small houses with large blue gums planted nearby. Some trees blow over easily if the soil is rather shallow with a hardpan layer. There is another contributing cause which might well be discussed at considerable length and that is the serious consequences of planting severely root-bound container plants. Such plants have a cluster of crooked tightly pressed roots which tend to strangle themselves and which form a distorted root system which is apt to produce a tree which can easily be blown over by the wind.

Recently in an English garden journal, a landscape architect stated that there was definitely a much greater interest in quick growing plants than formerly. He believed that this might possibly be related to the great insecurity and unrootedness of life in this war torn century and he concluded with the observation that one often repented of hurried gardening. We believe that there is a legitimate place for the quick growing trees and shrubs of which there are many which can be used in Southern California. However it is regrettable that many fine plants are rarely seen because their slow growth makes it difficult for the nurseryman to handle them at a profit. For example, large specimens of *Phoenix reclinata* are the only type palm we have which suggests the coconut palm of the tropics. It is refined in character, whether grown in single stems or in clumps. Regrettably it is so slow in growth that it is one of those things which one must grow for the next generation. *Calliandra Californica* is a very drought resistant shrub of neat habit which bears a profusion of small red flowers the year round. Likewise, it is so slow growing that nursery production is impractical and it is rare in cultivation.

The time factor must be considered from all angles by the nurseryman. After all, this is really what he is merchandizing. The salesman often has to answer the question—"How fast will this plant grow?" It is a very legitimate question. After all, a year past in the garden can never be replaced. Large trees are finest and a few moved in a landscape job may give it just the needed touch of distinction.

One could sing the praises of slow growing plant materials for their many valuable quantities, but there is a genuine need for plants which will grow rapidly and make a quick effect. Some of these plants unfortunately are weak and brittle or are correspondingly short-lived, but this is not necessarily always true.

With the present interest in bold tropical effects in plantings, there is a tendency to neglect the opportunities offered by the plants with very fine delicate foliage, or with unusual colors and values of texture. Some of these very refined types of foliage plants are unusually well suited for use in small confined areas. The popularity of various types of plants tends to go in cycles and it is difficult to predict future trends. Camellias are at a peak of popularity, and due to the availability of many new varieties of sasanqua camellias, this interest may not decline. Palms, bamboos, bromeliads, and succulents, especially very large specimens of the latter, are coming back into favor, since they seem to fit in with present architectural trends.

Clever pruning is the key to the use of plants in striking new ways. A few illustrations may be given. For instance, the Chinese evergreen elm is typically a flat-headed spreading weeping tree. By very severe pruning, allowing only a few heavy scaffold branches with greatly thinned out foliage to remain, a very unique tree may be produced. Care must be taken not to shorten the long pendulous twigs unduly. The beautiful mayten tree, *Maytenus boaria* may be handled similarly.

As another illustration one might mention the very severe thinning of clumps of the very large bamboos which is observed in some old drawings of Chinese gardens. In these a clump of bamboos growing at near maximum height might be thinned out to as few as three stems. In a sense, this bamboo then corresponds to a multiple trunked tree.

One must also evaluate the freedom of the species from insects or disease in choosing plants. Where the attention of a professional gardener is given regularly, there might be some point to planting things which require care in this respect. However, in a great many cases, the necessary care is apt to be neglected at the critical time. There is little sense in planting a species such as Monterey cypress in Southern California for it will begin to die about the time it begins to become really attractive. The coast live oak is a noble tree but is a doubtful proposition in a heavily watered lawn. In addition, it is often heavily attacked by certain insects and diseases which may disfigure it. Often a few changes in the planting list will result in a great deal more satisfaction and less expense to the owner.

"... Theophrastus was ... a botanist in pursuit of plant knowledge for its own sake. He is surrounded by thousands of years, before and after him, of superstitious jungles; he and his century are an intellectual clearing."

Green Laurels—DONALD CULROSS PEATTIE

HARDY TROPICALS FOR THE SUN

PHILIP EDWARD CHANDLER

POPULAR demand for the tropical look in contemporary planting seems to have increased within the past years in spite of prophecy to the contrary and despite the appearance of newer tricks in the trade. Generally speaking this insistence upon the big-leafed look is all very well where large-growing plants are required, or where there is a good deal of overhead or wall protection to afford considerable shade, and particularly in areas seldom visited by biting frosts.

But to achieve an acceptably bold effect, the landscape planner must learn the habits and limitations of the tropicals or semi-tropicals which he wishes to use, and then have the good grace to accept them in their own character instead of trying to make them into sizes and shapes they are not, or expecting them to thrive under conditions foreign to their natural habits. Some of our tropical plantings fail because of the planner's lack of skill with, or knowledge of, plant materials, and his eagerness to be dramatic.

If one really wants a tropical-looking planting in sun or shade, and is willing to be guided by the rules of nature (and perhaps a few by man) he may do rather well with the materials available, even with the vagaries of a not-very-tropical climate.

For framing, accenting, or even shading, there are no more fool-proof tropical plants than the palms: Washingtonias, Phoenix, Arecastrums, Trachycarpus, Chamaerops, Erytheas, etc.,—all perfectly cold-hardy, tolerant of any amount of sun and considerable shade, and frequently able to remain for a long time in soil and drainage not at all to their liking. And have these been used! For line value, accent, even screening, some color, and general "zip" we have the indefatigable *Phormium tenax*—green, gray-green, variegated, bronze, red-bronze, fairly tall. It will grow in sun, shade, wet, or drought, in almost any soil, from Las Vegas to Muscle Beach and from 'way up north in Oregon to well below the Equator. Palms can be very effective, tied down with a very dwarf bamboo, *Sasa pygmaea,* or the silver clumping grass, *Festuca glauca.*

Along with palms, or in place of, for height and line value in the tropical manner, nothing is hardier to sun and cold than *Cordyline australis,* mistakenly known in the trade as *Dracena indivisa* (the true *D. indivisa* has 6″ wide leaves, is less cold-hardy, and seldom seen in California). This Cordyline we have is the New Zealand Palm Lily, eventually achieving 25′ or more, but slowly, and resembles a Yucca superficially. The most arresting form is the bronze one, *Cordyline australis atropurpurea,* of deep red bronze, or its seedling variant with pale greenish-gray-bronze leaves suggesting the patina on pewter. Then there are the true Yuccas, *Yucca recurvifolia* (most common) with widish drooping gray-green leaves in many-headed rosettes, their trunks possessing a driftwood quality. *Yucca filamentosa* is similar but with narrower thready leaves, hardy to zero or lower. The Joshua Tree, *Yucca brevifolia,* is hardy and sun-loving but unsuccessful in the coastal region. And *Yucca Whipplei,* the Lord's Candle, is for dry plantings only. *Yucca aloifolia* on the other hand is suitable and adaptable to any sunny tropical planting where the bayonet-like leaves don't interfere with traffic.

A related genus harmonious with palms, flax (*Phormium*), cordylines, and the like, is the aloe, *Aloe arborscens* being the best known and most available. For color it is unsurpassed at Christmas time with its great spires of orange-red. Other species, many low and spreading, are available and will bloom later, some into May, all in nearby color range.

Then there are the grasses, and the bamboos —from almost flat to two-stories tall, mostly hardy, loving of sun and water (most will also thrive in shade as well); many species and varieties, from thin and open and delicate to coarse and heavy-caned. *Sasa palmata* (five feet), *Sasa tessellata* (six feet), *Pseudosasa japonica* (6′-8′), *Bambusa multiplex.* "variety" 'Chinese Goddess' (6′), and *Bambusa multiplex.* "var." 'Alphonse Karr' (10′, with pink young canes, deep yellow mature canes striped chartreuse): are all outstanding and all available. Among the grasses one of the most usable is *Arrhenatherum bulbosum* and related varieties in varying pattern and height, mostly quite low.

Similar to bamboo in feeling but completely unrelated is the so-called Heavenly Bamboo, *Nandina domestica,* which is not tropical at all but serves well in almost any dilemma, and has the particular interest of bloom, berries, and in the winter, lovely fern-like leaves turning firey red.

Other subjects for red or bronze foliage contrast include the fascinating *Dodonaea viscosa atropurpurea,* 6′-10′, open, of wonderful pattern value, surprisingly effective contrast to the big-leaved "tropicals"; *Acokanthera venenata* and *A. spectabilis,* heavy-leaved, very bronze to dull green with good clusters of marble-like berries (said to be somewhat poisonous), to 10′-20′ but very slowly; and *Catha edulis,* a shiny bronze and green shrub with fine red stems, the most color with the maximum hot sun and cold nights, the plant adaptable by intelligent pruning from four to ten feet, and even espaliered.

For actually shading an area conceived in the tropical motiff, there are several heat-tolerant and frost-enduring trees—*Aralia foliosa* and *A. chinensis*, both rather slow-growing umbrellas to 20′, of spiny fern-like leaves, easy of culture but insistent on good drainage; *Chiranthodendron platanoides*—the Monkey Hand tree, extremely fast, and only half-hardy (25°F. when well established), with large dusty-green leaves bearing tan tomentum beneath and wonderful beige flocking on leaf stems and younger branches, and conversation-piece blossoms of dark red, cup-shaped, out of the center of which protrudes a hand-like formation of brighter red with bright yellow backside. Of further interest the blossoms of this handsome Mexican tree dries into seed pods which suggest the Hawaiian woodrose; *Eriobotrya japonica*, the common Loquat, effective as a small to medium tree, espaliered, or as a great shrub, too common to be appreciated in spite of its magnificent furrowed leaves, interesting blossoms, and decorative edible fruits; and *Ficus macrophylla*, the Moreton Bay Fig, a fast-growing magnificent tree—too large for most plantings, but usable in limited areas where little underplanting is necessary, amenable to yearly root pruning (the famous semi-espaliered one in the patio of El Paseo in Santa Barbara is a good example of such a use, even without root pruning, and the adjoining foundations are still there, too). This is the only evergreen ficus which once well-established can endure consistently rather cold winters. Three other hardy, sun-loving evergreen trees adaptable to tropical effect, either for shading or massed for foliage and flower effects are the *Magnolia grandiflora* and its dwarf variant, *M. exoniensis* (20′), both too well known to warrant discussion; *Stenocarpus sinuatus*, the beautiful Firewheel Tree, still too little known and used, its great oak-like glossy leaves a wonderful foil for masses of wheel-like flame-colored flowers intermittent throughout the year; and *Talauma hodgsoni*, of the *Magnoliaceae*, a slow-growing small tree, displaying leathery leaves 20″ long and 9″ across, surrounding terminal 6″ ivory-petaled flowers with purplish-blue sepals.

Another hardy tree of tropical aspect which may occasionally find a place where an incredible root structure above ground is desirable is the almost deciduous Argentine Ombu, *Phytolacca dioica*, its limb structure as well as above-ground roots a natural, in free-form design.

Leafy fillers, 4′-12′, which may be depended upon to retain their mass value throughout most winters and incidentally add some much-craved "color," include *Alpinia nutans* (speciosa), the hardiest of all the gingers and in some respects the most beautiful with its bronzy leaf sheaths and pendulous clusters of shell-like white and reddish flowers; *Malvaviscus mollis*, Turk's Cap, a great fuzzy shrub of large golden-green leaves and scarlet hibiscus-like blossoms; the ever-adaptable handsome *Melianthus major* whose swirls of gray-green toothed and deepcut foliage pile up and spill so effectively out of over-size sunny raised plantings, islands and redwood tubs, and is particularly effective in association with *Acokanthera* and bronze *Phormium*, even picking up that red-bronze quality with its own maroon-colored curiously spiked blossoms in late winter and early spring.

One of the boldest of all tropical-looking plants of large scale where its vicious needles can be well out of contact, is the endlessly hardy century plant *Agave americana glauca*, much more commonly used in the Mediterranean and other subtropical regions than here. And a half-hardy, sun-tolerant formal-looking rosette is the bright green Spearlily, *Doryanthes palmeri*, to ten feet across and high at maturity, eventually throwing a spike of red bracted flowers many feet high. Equally effective where space permits and the giant grassy look is wanted is Pampas Grass, *Cortaderia selloana*, with great feather-like plumes of pale beige to ivory to pinkish mauve.

Smaller-scale subjects for line value include Joint Grass, *Equisetum hiemale*, particularly striking for its vertical quality and joint pattern, and especially valuable in over watered or poorly drained places; the several Moraeas for their wonderful leaves and delicate iris-like flowers; and any of the Dianellas for further narrow sword-like leaves and the amazing detail of their spikes of indigo seedpods.

Ground-covers are usually over used and particularly as cover between good looking specimens. The cleverer plantsman will insist upon *not* tying everything down with a thicket of Algerian ivy. He may use a subtly colored (not Kelly green) roofing aggregate or plain pea gravel, or just plain tan-colored decomposed granite, or be completely radical and have clean black well-tilled earth showing, lightly mulched with leafmold.

THE ROBIN

"The Robin is the one
That speechless from her nest
Submits that home and certainty
And sanctity are best."

EMILY DICKINSON

GROWING NOTES

GEORGE H. SPAULDING

It is our intention to follow up original comment on new plants in the *Growing Notes* column by later observations and comments. This could well involve an about face as to its value because growing conditions vary from year to year and are greatly influenced by the amount of rainfall, minimum and maximum temperatures, etc. As we go along you will see why it often takes a long period of time, usually years, to evaluate a new plant correctly. In this connection, we would like to solicit reports from our readers on any of the plants mentioned in *Growing Notes*. based on personal experiences in growing them.

Acacia steedmani (*Lasca Leaves,* Vol. III, No. 2. p. 29) merits an additional note we think worth recording. At this time of year (i.e. November) the effect created by the flower buds, which will not actually open for another month or two, is similar to that of the smoke-bush, and very attractive. The pink coloring of the branches is also especially noticeable at this time of year.

Dodonea viscosa purpurea (Vol. III, No. 1, p. 6) continues to warrant our previous enthusiasm. Three of our plants produced seed this past summer (1953). We are planning to grow a quantity of seedlings next year to recheck the percentage of purple-leaved individuals obtained in a population. We have learned during the past year that this plant will not tolerate too much water. Two field plantings that were watered well twice a month have flourished, but a planting watered weekly has died. The seed pods did not prove to be as showy as reports had led us to expect, but they do have a curious interest of their own.

Dombeya dregeana (Vol. III, No. 1, p. 6) is again in full bloom. This year the flowers are visible from some distance. The foliage is not as thick as last year which may account for the added showiness of the flowers.

Verbena peruviana, a newcomer to the pages of *Lasca Leaves*, is a firey Latin American plant, native to southern Brasil, Uruguay, and Peru. For the past year it has been one of the most striking ground covers in our trial plantings. It is a creeping cover, never growing more than an inch or two in height. Every node seems to root and in an unbelievably short time, a small plant set out from a 2″ pot will cover several square feet, a carpet of brilliant scarlet flowers. Its hardiness is still untested because a severe winter has not occurred since its introduction into our plantings. *Verbena peruviana* is easily propagated as noted above and in addition, has proved exceptionally adaptable to various soils. Although it has done well in heavy soil watered by sprinklers every two weeks, nevertheless it appears to be at its best on a hot dry hillside where the soil is decomposed granite and the watering very casual.

NOTES FOR THE HORTICULTURIST

MILDRED MATHIAS

Modern horticultural treatments of garden favorites are always welcome additions to our libraries. The following new books in this category may be mentioned:

Cross, John E., *The Book of the Geranium.* 184 pp. London. 1951. An up-to-date comprehensive discussion of a perennially popular plant. Chapters on culture, diseases and pests, etc. Reports on artificial light trials. Complete lists and brief descriptions of species and varieties. Several color plates.

Macself, A. J., *Ferns for Garden and Greenhouse.* 255 pp. London, 1952. A modern book on a long-neglected subject. Chapters on hardy and greenhouse ferns, their culture, propagation, pest and disease control. Illustrations and descriptions of many horticultural varieties.

Chapple, Fred J., *The Heather Garden.* 180 pp. London. 1952. A horticultural treatment of the uses and culture of heathers. Brief descriptions of species and varieties in cultivation.

Mansfield, T. C., *Carnations in Color and Cultivation.* 243 pp. London. 1952. A well-illustrated treatment of another garden favorite with chapters on soil, propagation, pests and diseases, and general maintenance. A glossary of 136 pages lists varieties with descriptive and cultural notes on each. Several color plates.

A series of popular books on trees includes:

Collingwood, George H., *Knowing Your Trees.* 312 pp. Washington. 1949. Descriptions of 150 trees with 806 illustrations of typical trees, their leaves, bark, flowers, and fruit.

Emerson, Arthur I. & Clarence M. Weed, *Our Trees—How to know them.* 5th edition, reprinted. 295 pp. Philadelphia. 1936. A popular book with full page plates and descriptions of 140 common trees, native and introduced.

Blackburn, Benjamin, *Trees and Shrubs in eastern North America.* 358 pp. New York. 1952. Non-technical descriptive keys to the native species.

Graves, Arthur H., *Illustrated Guide to Trees and Shrubs.* 240 pp. Wallingford, Connecticut. 1952. Keys, descriptions and illustrations of both native and cultivated woody plants, trees, shrubs and vines, commonly found in the northeastern United States.

Recommended library miscellany:

Andrews, F. W., *The Flowering Plants of the*

Anglo-Egyptian Sudan. vol. 1. 237 pp. 1950; vol. 2. 485 pp. 1952. A technical treatment of flora with keys to the genera and species and descriptions of the species. Many line drawings.

Richards, P. M., *The Tropical Rain Forest.* 450 pp. Cambridge. 1952. A comprehensive ecological treatment of an important forest association.

Esau, Katherine. *Plant Anatomy.* 735 pp. New York. 1953. A complete technical and authoritative treatment of the subject of plant anatomy.

Allinger, Gustav, *Der deutsche Garten.* 300 pp. München. 1950. A beautifully illustrated volume on landscape design.

Reusch, Glad & Mary Noble, *Corsage Craft.* 148 pp. New York. 1951. Lists of plant materials and their uses in corsages with a discussion of the techniques of corsage making.

Benz, M., *Flowers: their creative designs.* 289 pp. Houston. 1952. A profusely illustrated book on the use of flowers in arrangements for all occasions—corsages, bouquets, sprays and wreaths, and as potted plants and in dish gardens.

ARBORETUM AUTHORSHIP

W. Dan Quattlebaum, member of the editorial board of *Lasca Leaves*, and regular contributor to the column *Bird Notes*, with the collaboration of Edith B. Quattlebaum, has published a seven-page paper titled *Adventures with Pasadena Screech Owls.* The subtitle aptly gives the key to its purport: *Casual Experiences at our Residence in Pasadena.* Mr. and Mrs. Quattlebaum have been observing bird life within their own home precincts, as well as elsewhere in Pasadena, since 1929. This delightful description of one of the bird families of their neigborhood, with its single charming illustration, is very appealing in its simplicity—very like to the conversations one can sometimes engage in with Mr. Quattlebaum when he makes his welcome visits to the Arboretum grounds. In the current issue of the Audubon Society Magazine, one may enjoy further glimpse of the pair of owls being watched by "Julie," a littlest bird-watcher of 2½ years! The paper-bound booklet (7½" x 9½") is available through the Arboretum offices in limited quantity, or from Mr. Quattlebaum directly, 1925 Paloma St., Pasadena.

The pen and ink sketch of the Agave plant is a reproduction of an original by one of the members of the Arboretum staff, Edward ("Ted") Pugh, of the Garden Maintenance Staff. Ted spends some of his leisure moments in the well known "postman's holiday" fashion—on the Arboretum grounds tracking down and preserving, through his pen or brush, some of the beauties of the landscape. We shall see more of this young artist's work in future issues of *Lasca Leaves.*

INTERNATIONAL CODE OF NOMENCLATURE FOR CULTIVATED PLANTS

MILDRED MATHIAS

The need for a comprehensive set of rules to govern the naming of cultivated plants has been evident for many years. Since the initial suggestions by DeCandolle in 1862 horticulturists and botanists have been working on a code applicable to the problems of naming cultivated plants. This Code was formulated and adopted, after many years of study, by the International Botanical Congress Committee for the Nomenclature of Cutlivated Plants and the International Committee on Horticultural Nomenclature and Registration at the Thirteenth International Horticultural Congress, London, September, 1952. (Copies are available at 25¢ a copy from the Secretary, American Horticultural Council, Inc., Bailey Hortorium, Cornell University, Ithaca, N. Y.)

It is important that a precise, stable and internationally accepted system of nomenclature be available and "the aim of this Code is to promote uniformity, accuracy and fixity in the use of names with the minimum disturbance of existing nomenclature." The Code should be studied in entirety either in the condensed or the full text. The following are provisions of general interest to all plantsmen:

1. The much misused term 'variety' is to be reserved for those forms of cultivated plants which are known to occur in the wild and which have names in Latin form.

2. The term 'cultivar' (abbreviated as cv.) is to be used for all those forms which have oirginated or are maintained only in cultivation.

3. From 1 January, 1954, onward no new cultivars should be named in Latin but should have a common name. 'Pygmy' not *pygmaeus*.

4. The cultivar-name should begin with a capital letter and be distinguished from the Latin botanical name, preferably by enclosing it in single quotation marks.

5. Latin names given to cultivars before 1 January, 1954, are not to be rejected but should be typographically distinguished from Latin names of botanical varieties.

6. The same cultivar-name should not be used twice in the same genus.

7. A name has no standing under this code unless validly published or officially registered. (Valid publication and registration are defined.)

8. A set of rules is given for the naming of hybrids.

The following are examples of correct names for cultivated plants:

Syringa vulgaris 'Mont Blanc' or Lilac 'Mont Blanc'
Thuja orientalis 'elegantissima'
Fagus sylvatica atropunicea (a botanical variety although in cultivation)
Fagus sylvatica 'riversii' (a particular clone)
Crocus sieberi 'Hubert Edelsten' and not *C. sieberi* 'Edelsten's variety.'
Rose (Hybrid Tea) 'Richmond'
Lilium x 'Shuksan' or Lilium (Bellingham Hybrids) 'Shuksan'

This Code can only achieve its aims if it is adequately supported and widely adopted. "The breeders and introducers of new plants are urged, in their own interest, to give names which are in accordance with the Code. Seedsmen and nurserymen should try to bring their catalogues into line with it. Registering authorities should refuse to register names not in accordance with the Code; no awards should be given to plants not named in accordance with the Code. Specialist societies should use it as a basis for their own codes of nomenclature. Writers on cultivated plants should endeavor to employ only names correct according to the Code; by frequently mentioning the Code as a standard of procedure they will help to make it known and appreciated." The Code can be modified and revised if genuine trial reveals the need for any changes.

In accordance with these recommendations and following the lead of other horticultural journals *Lasca Leaves* will in the future follow the provisions of the Code.

* * *

"The dream of peace on earth is strongly rooted in the human heart, but it was not in the mind of the architect when he planned the theater of the world, nor of the director when he cast the players for their several roles. The original plan that terrestrial history shall unfold with turmoil has never suffered any significant alteration. The dead earth over which the pageant of life has streamed these many eons is dead only to the eye that does not see it as it really is. Through the ages conflict has marked the sojourn not only of plants and animals, but also the clod beneath them."

p. 1. *Autobiography of Earth*—
JOHN HODGDON BRADLEY

SCRATCHBOARD SKETCH BY ALFRED HOTTES

Odontospermum sericeum

O-don-to-sper'-mum, (*tooth* plus *seed*). *Compositae* fam. (e.g. daisy, sunflower).

The Canary Cowseye, *Odontospermum sericeum,* comes from the Canary Islands and was introduced to England in 1779 and to California culture by Hugh Evans. The plants grow about 2 feet tall and are very compact. The silky-hairy leaves give a whitish appearance. The leaves are opposite though they do not seem that way as they are clustered. They are oblong spatulate and apple-scented when crushed. The golden yellow daisies are solitary, 2 to 3 inches in diameter. The ray florets are 3-toothed at the tip. The plants are always in bloom when weather permits.

Uses. This is definitely a shrub for well-drained slopes and the semi-wild spot, but inasmuch as it has gray foliage it is always desirable for the gray garden.

Culture. Odontospermum does not want too much water but a warm, sunny well-drained spot. Prune back frequently to keep the plants in good form and to extend the blooming season. It tolerates a temperature of 28 degrees.

BIRD NOTES

W. Dan Quattlebaum

Many spring and fall migrants stop over at the Arboretum—some for a day or so, others for a week or more. Visitors this fall of 1953 were numerous Robins, Bluebirds and Coots, a pair of Cinnamon Teals, eight Shoveler Ducks, a Green-winged Teal, a Wood Duck, four Ruddy Ducks, a Kingfisher and an American Egret.

The Egret came in a number of times, and Mr. Fawcett told me that he saw it come in one particular day but the Crows were so hostile, it took off in haste and he hasn't seen it since. The Crows also frequently berate a visiting Horned Owl which sits by day in a dense Eucalyptus tree on Tallac Knoll; he just sits close and continues to nod, ignoring the Crows.

Among the winter residents the following have arrived: Mountain Chickadee, Audubon Warbler, Gambel's Sparrow, Ruby-crowned Kinglet, Cassin's Purple Finch, Hermit Thrush and Red-breasted Sapsucker.

THRUSHES

"Through Tanglewood the thrushes trip,
As brown as any clod
But in their spotted throats are hung
The vesper-bells of God.

And I know little secret truths
And hidden things of good,
Since I have heard the thrushes sing
At dusk, in Tanglewood."

Earle Wilson Baker

* * *

Southern California Spring Flower and Garden Show. Brookside Park, Pasadena, February 26 through March 7, 1954.

Oakland Flower Show, April 29 through May 1, 1954.

Dr. Verdoorn's treatise on "Botanical Gardens and Arboretums of the Past and Their Reconstruction" will appear in the Spring issue of *Lasca Leaves*.

CALENDAR

Southern California Camellia Society: meets the second Thursday of each month, November through April; at Jefferson School Auditorium, corner of No. Sierra Bonita Ave., and Villa St., Pasadena. Camellia flower exhibit at 7:30 p.m.; meeting call to order, 8 p.m.

* * *

Southern California Horticultural Institute: meets the third Thursday of each month, at the Recreation Building, 18th and Toberman, Los Angeles. Plant exhibit, 7:30 p.m.; meeting call to order, 8 p.m.

* * *

Bulb Society: meets the 3rd Friday of the month at Michillinda Women's Club, 736 So. Rosemead Blvd., Pasadena; 7:30 p.m.

* * *

Cymbidium Society: meets the 4th Tuesday of the month at I.O.O.F. Temple, 175 No. Los Robles, Pasadena; 7:30 p.m.

* * *

Orchid Hobbyists: San Gabriel unit, meets the 3rd Thursday, at Michillinda Women's Club, 736 So. Rosemead Blvd., Pasadena; 8 p.m.

* * *

International Flower Show: March 13-21, 1954. See *Names, Notes and News* column for detailed announcement.

* * *

Note: *Plant Societies* please note that this column is designed to keep our readers posted on regular meeting dates of horticultural and botanical organizations, within the Los Angeles area particularly; and to carry announcement of significant programs within the quarterly period of *Lasca Leaves'* publication. Any data which such organizations wish to submit for publication in this column should reach our *Plant Societies* Editor, George H. Spalding (Box 688, Arcadia, Calif.) not later than the 1st of December, March, June and September to meet the quarterly press dates. Kindly include the name of the person responsible for releasing the data and to whom correspondence or telephone communication may be directed, as well as the society name, meeting dates, place of meeting. *Garden Clubs* are among the groups invited to make use of this column.

EDITOR'S NOTES

Readers of *Lasca Leaves* have been pleasantly introduced in Volume III to its Ornithological Editor, W. Dan Quattlebaum, not only through the column, *Bird Notes*, but also in salute to the Muse of poetry in quoted selections. An added achievement—laurels shared with Edith B. Quattlebaum—is the publication of a seven-page paper titled *Adventures with Pasadena Screech Owls*, available through the Arboretum offices. A germane remark on page 6 of this commendable little treatise strikes the chosen keynote of the editor's comments in this issue; like the small gray owl who

> *"... being wise and tolerant, practices the principle that one should not speak unless he can improve on silence."*

NAMES, NOTES AND NEWS

The annual meeting of the Southern California Turf Conference was held on October 12 and 13, 1953. On the afternoon of the 13th, the members inspected the turf plots at the Arboretum. These plot studies are primarily for home lawn development and offer contrasting management procedures of some of the same grasses used on golf courses and public recreational areas. An article of correlative interest on these test plots appeared in *Lasca Leaves*, Vol. III, No. 3, p. 34, under the title "Soil Conditioning with Krilium" by Louis B. Martin.

* * *

The California International Flower Show will be held at Hollywood Park, Inglewood, California, from March 13 through March 21, 1954. Following the accepted precedent, Educational Exhibits again this year will have a centralized theme. The theme is Mexican Plants which will undoubtedly provide enlightening knowledge of the native flora of our neighboring country.

The readers of *Lasca Leaves* are provided with a reference list of *The International Flower Show's* 1954 Committee on Educational Exhibits as follows:

Chairman: Dr. Mildred E. Mathias, Dept. of Botany, Plant Physiology Bldg., Univ. of Calif. at Los Angeles, Los Angeles 24.
Dr. Edwin B. Angier, C. W. Pierce School of Agriculture, Canoga Park.
Mr. J. A. Beutel, County Farm Advisor, 808 Spring St., Los Angeles 12.
Mr. Philip A. Chandler, Dept. of Plant Pathology, Univ. of Calif. at Los Angeles, Veteran Ave., Los Angeles 24.
Mr. LeRoy Chitwood,(*) Keeline-Wilcox Nurseries, Box 278, Montebello.
Mr. Garrett Eckbo, Landscape Architect, 8942 Wonderland Park Ave., Los Angeles.
Mr. Marston Kimball, Extension Ornamental Horticulture, PB 156, Univ. of Calif. at Los Angeles, Los Angeles 24.
Mr. L. O. Matthews, Los Angeles Board of Education, 451 No. Hill St., Los Angeles 12.
Mr. Alfred Roberts, 10136 National Blvd., Los Angeles 34.
Dr. Russell J. Seibert, Director, Los Angeles State and County Arboretum, Box 688, Arcadia.
Mr. Charles Wenger, Supervisor, Landscape Maintenance, Los Angeles City Schools, 1425 So. San Pedro St., Los Angeles.

* * *

Howard S. Bodger, Exec.-Secy. of Bodger Seeds, Ltd., El Monte, Calif., recently was awarded a citation of merit by the American Horticultural Council at their Congress which met in Philadelphia, Pa., November 5, 1953. The award is in recognition of Mr. Bodger's contributions to the horticultural world in the field of plant introduction. He shared honors with four other recipients, one of whom is another Pacific Coast horticulturist, and botanist, the late Miss Alice Eastwood, Academy of Sciences, San Francisco. It is the first time the American Horticultural Council has made such awards. Since Mr. Bodger was unable to attend the presentation ceremony in Philadelphia, an occasion was planned by television on the Pacific Coast, Sunday, November 29th, when the presentation was made by Norvell Gillespie, locally prominent garden consultant.

* * *

International honor to Herbert C. Swim, outstanding southern California rose hybridizer, came in the bestowal of triple awards again this year: for his rose seedling *Mojave,* the All America Award for 1954 was given in his own country, and added to that was an award from the Concours des Roses Nouvelles, Bagatelle Gardens, Paris, France, and one from the Concours International des Roses, Geneva, Switzerland. Swiss Consul General Dr. Walter Schmid made the presentation of the Geneva Cup and Gold Medal Certificate; and French Consul General Raoul Bertrand presented the Bagatelle Gold Medal Award. The occasion of the presentation was a luncheon in the Los Angeles Room of the Statler Hotel, Los Angeles, December 8th, attended by a large group of other leading horticulturists. J. Awdry Armstrong, Executive Vice-President of Armstrong Nurseries, Ontario, Calif., introduced Mr. Swim as their Director of Research, whose competent work has now been twice recognized by these coveted awards rarely presented together to one individual. As a further mark of esteem, a gold cup was also presented to Mr. Swim by Mr. Manfred Myberg of Germain's Seed Company, Los Angeles, on behalf of Mr. Swim's many friends and associates.

COVER PICTURE

As a fitting frame for the view of the Sierra Madre mountain range in the background, looking north from the Arboretum grounds in Arcadia, *Platanus racemosa* Nutt. (*P. californica* Benth.) arches the foreground. An errant branch, it nevertheless serves the purpose of beauty in its setting. This Sycamore tree as it is more commonly known, is the only native Sycamore in the United States indigenous to Southern California, and Lower California. In the distance may be seen a tall *Eucalyptus globulus* which took the stage as a cover picture for *Lasca Leaves* in its dwarf form, Vol. I, No. 3, April, 1951.

(*) Apologies to Mr. Chitwood for mispelling of his name, *Lasca Leaves,* Vol. III, No. 4, p. 62.

BOOK REVIEWS AND COMMENTS

Hollies: H. Harold Hume. The Macmillan Co., New York, 1953. 242 pp. $6.75

Here is a book for which many horticulturists, managers of estates, and just plain gardeners have been waiting. Heads of reference departments in libraries will welcome it, too. Much has been written of hollies in books and magazines and pamphlets over the centuries, but here at last an expert has brought available information together in one very readable volume. Dr. Hume, Provost and Dean Emeritus of the College of Agriculture of the University of Florida, is the author of many books on gardening and flowers, including "Azaleas and Camellias," and "Gardening in the Lower South."

"Hollies" not only provides a practical guide for the planter, professional or amateur, but gives the general reader and dilettante an understanding of the long history of holly and its uses, pagan, Christian, or a mixture of the two. There are many illustrations: eight photographs in color, sixty-odd more in black and white, together with useful line drawings of methods used in propagation.

Anyone interested in hollies will understand the importance of this book simply by reading the titles of the chapters: "Holly and Man," "Botany of Hollies," "American Holly Varieties," "English Hollies," "Chinese Holly," "Japanese Holly," "Miscellaneous Evergreen Hollies," "Deciduous Hollies," "Caffeine Hollies," "Noteworthy Hollies," "Holly Propagation," "Holly Pollination," "Planting Hollies," "Holly Culture," "Values and Uses," "Holly Orcharding," "Holly Pests." There is, of course, an index for easy reference.

Many readers may find a special interest in the chapter on Caffeine Hollies. Most of us know that tea, as we find it in stores and on our tables, comes from the leaves of an Asian tree or bush related to the camellias. Now we find that the Indians of both North and South America made tea of considerable strength from holly leaves. The *yerba maté* of South America is still harvested from wild or orchard trees in Paraguay, Brazil and Argentina. Thus the flowering camellia and the decorative holly have each an added value—in the teacup or in the sometimes very ornate *maté* cup.

J. Howard Asper

400 Plants of South Florida—Julia F. Morton and R. Bruce Ledin. Text House (Florida) Inc., 1952. A Florida Nature Series Publication. 134 pp. 28 full page drawings by Frank D. Venning. $3.50.

The "400" South Florida's plants include the more striking and most frequently encountered trees, shrubs, vines and herbaceous specimens. They are listed alphabeticaly and are concisely described, serving as a guide for plant-loving visitors and residents alike. Both exotic and native flowering and fruiting plants as well as others purely ornamental come under consideration. Descriptions embrace 1) common names; 2) ornamental values briefly discussed; 3) edible and poisonous characteristics; 4) medicinal and other uses; 5) notation as to where the plants are native. Attractively printed on tinted paper, text and illustrations present a splendid appearance; the latter are simply and artistically drawn, affording a means of quick recognition of species pictured. Southern Californians will find a particular number of familiar species—some commonly grown, some rarely. Altogether a gratifying addition to horticultural literature.

50 Tropical Fruits of Nassau—Kendal and Julia Morton. Text House (Florida) Inc., Coral Gables, Fla. A Florida Nature Series Publication. 1946. 115 pp. 55 photographs by the authors. $3.00.

A companion volume to *400 Plants of South Florida*, this re-issue (1953) is delightfully illustrated recording the more commonly grown indigenous and exotic fruits of Nassau, and incidentally of South Florida. Illustrative photographs of each fruit are accompanied by history notes, descriptions and many uses of these fruits, as well as appealing ways of preparing them as edibles, and note as to when each is in season. A number of the fruits are such as are grown in southern California.

Russell J. Seibert

Bromeliads—A Cultural Handbook by Mulford B. Foster and other members of The Bromeliad Society. Published by The Bromeliad Society, 647 South Saltair Avenue, Los Angeles 49, 1953. 64 pages. Paper bound $1.50; Cloth bound $3.00. (Miss Victoria Padilla Secy.)

It is fortunate that this book on bromeliads, the first of its kind in English, is largely the work of a man so eminently qualified to write it--Mulford B. Foster, whose name has become synomous with the plant. He has designed this cultural handbook to give both the novice and the experienced horticulturist a better insight into the successful growing and propagation of this hitherto little-known family of plants. The book opens with a general description of the family and its geographic distribution. Of particular interest is the newest key to the genera written by Lyman B. Smith, of the Smithsonian Institution. Every phase of bromeliad culture is then covered. Growing media, potting, watering, temperature and air control, fertilization, and pest control are fully considered in easy-to-understand, non-technical language. Successful pollination procedures are described, as well as propagation by seed and offshoot. The concluding section contains a number of articles of general interest by various members of the Society. Ladislaus Cutak, of the Missouri Botanical Garden, tells of growing bromeliads under glass; Mr. William Hertrich, of the Huntington Botanical Gardens, describes growing bromeliads in the sun; and Julian Nally of Florida, tells of growing bromeliads by the acre as a part of his landscape scene. The book is amply illustrated and contains a glossary of terms and a list of commercial growers. The book fills a long felt need and comes at an opportune time as interest in this American plant family grows.

Victoria Padilla

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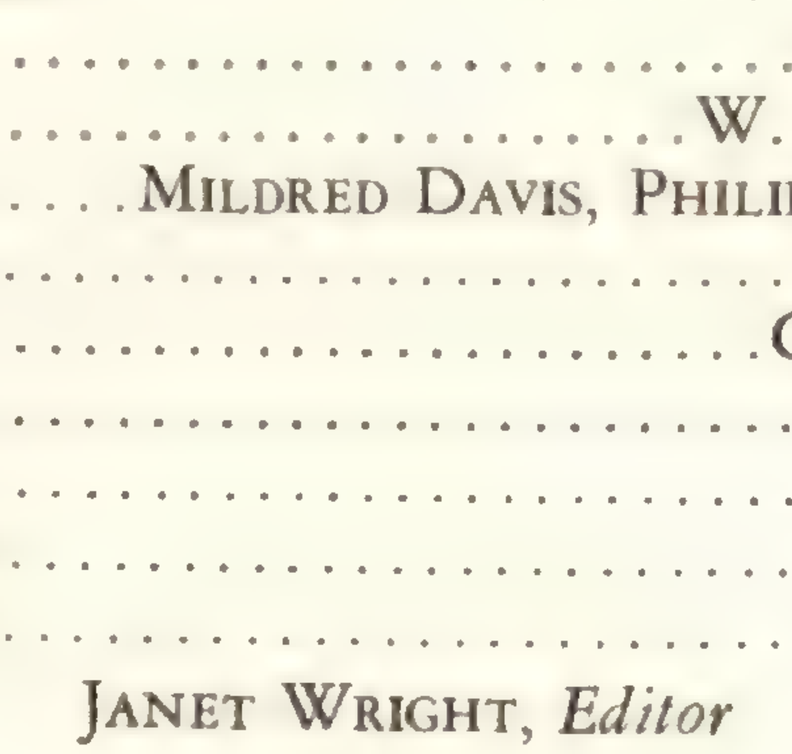

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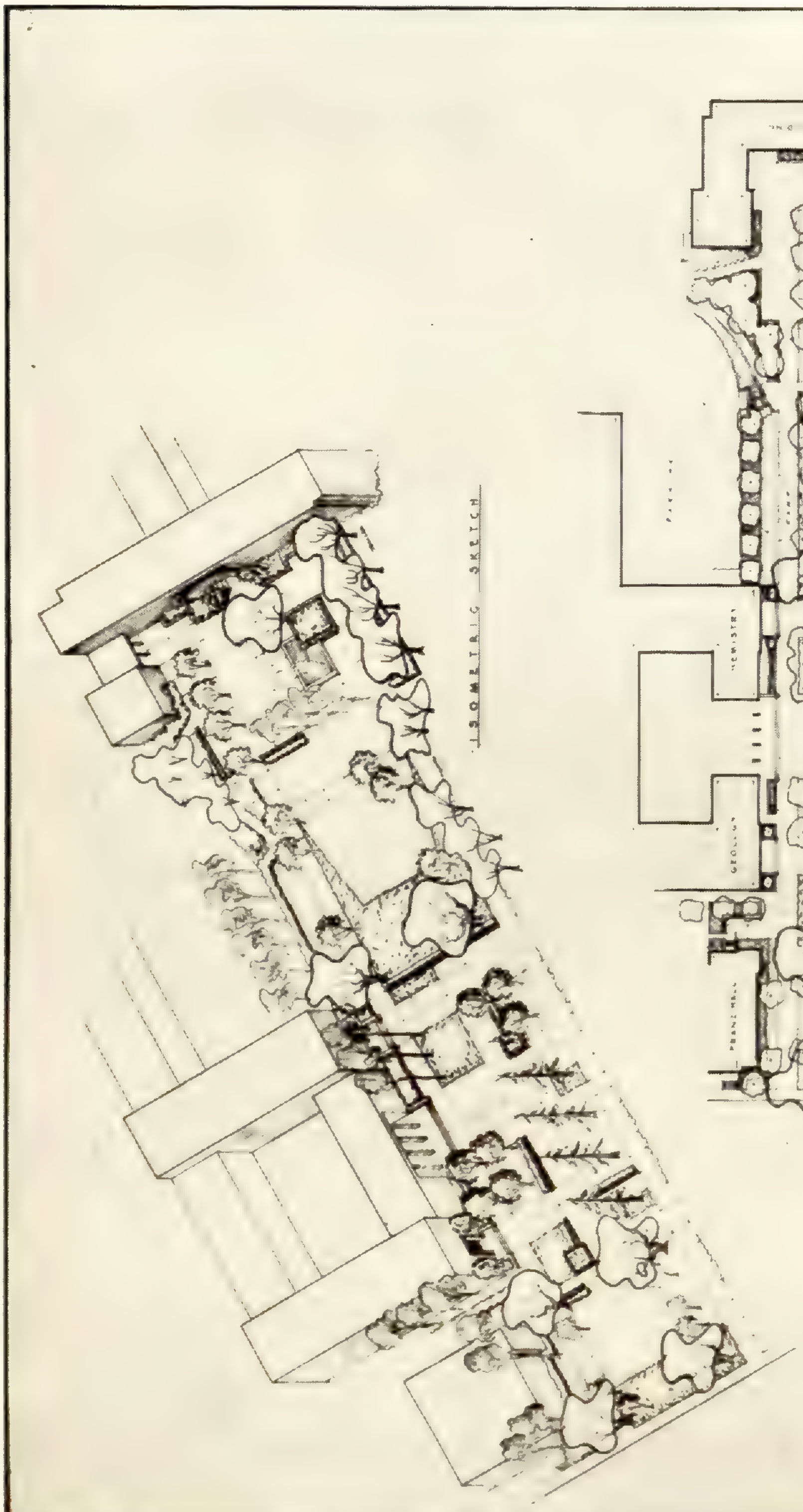


Landscape Architect's Drawing for Court of the Sciences, University of California at Los Angeles, Westwood. Courtesy of Ralph D. Cornell, Landscape Architect.

POINTS OF ENTRY AND THEIR CIVIC VALUE

RALPH D. CORNELL AND HOWARD E. TROLLER, *Landscape Architects*

THE FIRST and last impressions that a traveller receives from any community are those gained at the points of entry,—the nerve ganglia of the many routes of travel. These impressions are important and enduring. Good or bad they fix indelible images in the minds of those who pass through the portals of our cities which, in their turn, may serve as the gateway through which peoples of other countries enter our land.

Once inside, the traveller traverses the public highways. He observes the public buildings, parks and parkways and the component parts of the community. The impressions that they create, again, become very important in the complex, mosaic picture that visitors and citizens, alike, form in their minds and consciousness. The values relating to these impressions are very broad. Not only are they psychologic and aesthetic but they reflect equally in hard dollar-and-cents economy of community values. They should not be ignored.

Proper planning of the points of entry into a city, of its highways and city plan, of its parks and parkways and the spaces around public buildings, presents a many-pronged problem. There are countless factors to be considered if such planning is to be practical and is to serve the functional requirements of daily use and meet the aesthetic plane necessary to satisfy demands of our current development in "civilized" living. Such matters generally are too technical to be expanded in a brief article of this nature, written for a horticultural publication. For that reason we shall, perhaps, stress the planting phase of planning more than some of the other factors which really may be more basically fundamental to good landscape design than is the single phase of adding plants to the picture after the plan pattern has been established.

All landscape design is three-dimensional and involves much more than making a pretty, two-dimensional drawing on paper. It is deeply influenced by topography, land uses to which areas shall be put, soil, drainage, grading, climate, environmental setting, and—cost. Plants, which are a highly important part of the end product in average landscape planning, may be a very small part in the percentage cost of the work. It all depends upon the type of work and upon whether the problem is one of planting in a more or less decorative sense, or whether it is concerned with the larger aspects of plannings that include much more than the selection and placing of plants.

The planning design of public work such as parks, civic centers, public buildings and such, calls for a more timeless quality than does planning of private work. Public landscaping should be more pleasing after a hundred years than it is one year from the time of planting. Time plays a more important part in the design of public spaces than it does in gardens or small, commercial work. And yet the plant materials that are used in any scheme are far from timeless, although some trees will live and thrive for hundreds of years. Architecture, masonry and ground forms can be brought to full completeness the day that work is finished and, barring calamity, will stand more or less indefinitely without change. *By contrast, the planting of a tree introduces a living, growing element into the composition,—a mass and form that will change with the seasons and with the years. If properly placed and cared for it should improve with age and increasingly add to the satisfaction and beauty of the design that was conceived in the planner's mind.*

Landscape planning of public areas is largely influenced by the functional aspects of circulation, use, community culture and

costs as well as by the considerable masses of buildings and other architectural forms. As the architectural profession largely has shaken off the habit of eclectic design so, too, should the landscape plan eliminate stylized formality, abstract frivolities or naturalistic confusion that lose the real meaning and purpose for its being. Public buildings should not be the background for botanical experimentation.

In many cases of public work the architectural structures dominate the entire picture and thus should generate the mood as well as the motif for the design of the relatively small spaces about them. The landscape pattern should be painted broadly with ground covers and lawns and controlled plant masses. Form should be defined by shrubs, and trees should articulate space. Mass effects become far more important as emphasis than do individual plant specimens or foliage forms. Proper juxtaposition of masses may achieve interest and emphasis. These points are well illustrated by the planting along the Spring Street side of the Federal Building in Los Angeles.

All materials and elements selected for use in public work should be of good quality, even though initial cost may be high, since they should be able to serve and endure through many years. This truism holds particularly in the choice of plant materials, which should be hardy in situations where used. For the most part they should be long-lived and should require a minimum amount of coddling for proper growth and development. First cost is capitalized, written off, and forgotten, but maintenance goes on forever. It is important that the cost and nuisance of upkeep do not strangle and kill the "goose that lays the eggs." Plant materials are lamentably dependent upon proper maintenance for good development and lasting quality. If materials of good quality are to remain just that and are to express intent of the design, they must be properly maintained with a comprehension and understanding of those things envisioned by the designer.

If the planting of public areas, chiefly at focal points of community life, is to be sound, basically and structurally, it may not be considered lightly as embroidery on a garment or the feather in the hat. It should be rich and meaty, fully of body and substance in its textures, color and massing. It is the thing of which much of the design is built. Interest in horticultural novelties, at the expense of basic design, can ruin an area as quickly as can any other lack in understanding of the principles of design. The novelty or specimen tree calls attention to itself by virtue of its contrasts with surrounding materials, by its form, its texture, its color, its position on the plan. There is a place for such accents but no planting plan should become a collection of accents, each one shouting for individual recognition. Plants are not the end result in public planting, they are one means to the end and ought to be treated as just that. The artist uses them skillfully, not casually.

"But let's have color, lots of it," sings the chorus. "The city needs more color." How true that is! But it is a truism fraught with countless hazards, for it takes more than just color to create beauty. Billboards can be very colorful without an aesthetic touch in their entire framework. Color in planting must be handled very intelligently and skillfully if its highest possibilities are to be realized, since color-design and composition call for as much skill as do the many other elements of composition that go into any successful creation. The danger is that interest in color, alone, may blind one to the other values, loss of which impairs and reduces the best results that might be wrought with color. So again, color should not be thought of merely as tinsel or frosting on the cake, but as an integral part of that fundamental melange of subtleties from which a skillful designer draws materials of his trade and assembles them into a well-knit and unified creation. So, as with specimen plants, it is well to avoid a collection of color accents that do not relate to the design, but which tend to become a collection of abstractions that approach chaos rather than unity. That means, again, that color in landscape design usu-

ally should be a means to the end rather than the end result, itself.

These things of which we speak probably seem to be a bit vague and general but, as with all things, are relatively simple when understood. They resolve into the fact that the landscape planning of public areas involves more than casual or promiscuous placing and planting of trees and shrubs and flowers. As in nature's famed "balances of life" there is much to be considered beyond any one individual factor. Only as the intelligence is comprehending can one hope for the finest results.

The traveller's reaction to visual experiences usually is not analytical of reasons why he is pleased, indifferent or actually displeased. However, his impressions may be very strong. Like the man who said that he couldn't draw a straight line but he surely could tell one when he saw it, we all may not know what makes a landscape plan either groan or sing. But there are many of us who can recognize the music when it sings.

"WILLIAM PENN. HORTICULTURIST"

"It is not enough to say of any man that he was born, he lived, and he died. The years between are those that make or break a family or a nation. Frequently a nation has been founded by the genius of one great mind. So it was with William Penn, who could not, of course, be called a nation builder, but he was a founder of a great state on the North American continent. . . ." So commences a small tightly packed little book under the title, *William Penn, Horticulturist*, by Rachel McMasters Miller Hunt (University of Pittsburgh Press 1953). Thirty-eight pages of well selected and well correlated material, including index, bibliography, and a facsimile printing of a significant letter, bring to the reader a reduced but sharply delineated portrait of this countryman of ours who added virility to the history of our land. There were, of course, two personages deserving of remembrance of the name, William Penn, the Admiral—"only seaman in English history to hold the rank of general of the sea . . ."—and William Penn, the son, perhaps best known as a Quaker preacher and writer—less well remembered as a city planner and horticulturist.

On land granted to him by Charter from the King in 1681, William Penn, the son designed the pattern of the town destined to become the stable city of Philadelphia, with a determination that it should not grow "in haphazard fashion." After setting aside 10,000 acres at the junction of the two rivers, Schuylkill and Delaware and planning his "checkerboard" of city streets, he made provision also for "A public square or park of 10 acres and four more of 8 acres each in the 4 quarters of the city [to provide] 'for the comfort and recreation of all forever.'" For his own family estate grounds he planned to have his manor house—the famed *Pennsbury Manor*, restored in 1938 by the *Pennsylvania Historical and Museum Commission*—surrounded with a "heavy wooded park . . ." where, as he later wrote, "The Woods are adorned with Lovely Flowers, for Colour, Greatness, Figure and Variety . . . The Natural Produce of the Country, of Vegetables, is Trees, Fruits, Plants, Flowers. The Trees of most Note are the Black Walnut, Cedar, Cyprus, Chestnut, Poplar, Gumwood, Hickery, Sassafrax, Ash, Beech, and Oak of divers Sorts, as Red, White, and Black; Spanish Chestnut and Swamp, the most Durable of all: Of All Which, there is Plenty for the Use of Man.". Penn wrote generously about his estate and his love of it, inserting comments on the fertile alluvial earth that was his to work with, on the improvement of the land by the addition of "ashes and soot . . . excellent for the grounds"; on the fact that his carrots and onions were better than those in England; on his abundance of fruits—"Peaches of three kinds . . . pears and apples . . . cherries and apricots . . . prunes and quinces . . . and grapes of divers sorts . . ." In his famous book *Fruits of Solitude*, he wrote: "The Country Life is to be preferr'd; for there we see the Work of God; but in Cities little else but the Works of Men: And the one makes a better Subject for our Contemplation than the other."

Little wonder that William Penn "stands upon record as the most humane, the most moderate and the most pacific of all governors" when we read of his gentle concern—dynamic and firm when necessary—for his fellowmen, including his "blacks" to whom he bequeathed their freedom. In Philadelphia today, once each decade commemorating the arrival of Penn in the new land, celebration is held to honor him in special tribute. In 1932—the 250th commemoration—a small volume was produced, titled *Penn's Woods*, by Edward Embree Wildman (Christopher Sower Co. 1933) listing and describing the trees of Pennsylvania—and Delaware and New Jersey and Maryland, all "Penn's Woods" originally—"those monarchs here when William Penn first reached these shores in October of 1682."

BOTANICAL GARDENS AND ARBORETUMS OF THE PAST AND THEIR RECONSTRUCTION

FRANS VERDOORN

*Secretary, International Biohistorical Commission**

Horti Botanici, quos vulgo Paradisos nuncupant, comprehendunt vegetabilia peregrina, ubi aedificia vario caloris gradu fovent etiam ferventi soli adsvetas. Hi maximo usu se commendant; nam praeterquam quod exoticas spectare licet, etiam congeneres hic & adfines sistuntur, ut similitudo & discrepantia facillime observetur (C. LINNAE Instructio Musei. 1753).

BOTANICAL GARDENS, *i.e.*, gardens in which plants are grown for educational or experimental, rather than for ornamental or utilitarian purposes are almost as old as human culture. With astronomical observation posts, they belong to the oldest scientific institutions. They often pioneered in the introduction of economic and ornamental plants and played thereby a leading rôle in the cultural history of mankind. For centuries they were the centres of botanical and much other biological research, thereby playing an important rôle in the history of biology.

The study of the gardens of previous generations is not only interesting and stimulating but useful for many purposes. In the first place we cannot understand today's botanical gardens and arboretums well, just as we cannot really understand any subject of pure or applied biology, unless we make ourselves familiar with its development through the ages. To appreciate a modern botanical garden and to evaluate its future possibilities we have to know about its history, about the life and work of those who were concerned with it before our time, about the history and use of the land before the establishment of the garden in question and, last but not least, about the origin and history of the plants grown in the garden.

All this is not as easy as it sounds, we do not want to collect some odds and ends, some amusing anecdotes; we are scientists, not antiquarians, and we want to obtain an accurate and somewhat continuous picture of the development of the gardens of the world generally, and of our own garden in particular. Now the history of any scientific subject, in our case the history of botanical gardens, is not just a combination of history, on the one hand, and of science, in this case botany and horticulture, on the other hand. Instead of dealing by direct observation, as we botanists and horticulturists are accustomed to do, with plants, living or dead, we have to deal with what the historian calls documents: printed accounts, manuscripts, prints, paintings, drawings, maps, letters, diaries, note books and other papers. These tell us, *indirectly*, about the gardens, their plants, and their workers of the past. This means that we have to follow the approach of the humanist rather than that of the biologist. This was not so difficult fifty years ago, when all in charge of a botanical garden had been to a Latin School and trained in the humaniora. Today, we often have to make ourselves first acquainted with the method of the history of science and with "historical criticism," which calls for other methods and techniques than those followed in biological and horticultural research.

* * *

As I outlined elsewhere, in great detail, we will find that there are several ways of approaching the history of a garden or a group of gardens or, a period of gardening or the history of the plants grown there. The easiest way is the *Bibliographical Method*. We make a search of

*Based on an unpublished lecture held before the *American Association of Park Executives*, Boston, Mass., October 5, 1946.

all published material on the subject we are concerned with and publish this with, or without, annotation, as was done by DENISE in his memoir on the Jardin des Plantes in Paris.

Then we may follow the *Biographical Method*.—We study our subject through the life of those who played a major part in its development. BAAS BECKING obtained very good results with this method in his account of the Leyden Botanic Garden.

The Enumerating Method.—We list all data we are able to find, mostly in chronological order, without deduction, without analysis, without too much philosophy.

The Dogmatic Method is often followed by beginners and historically not well educated colleagues. We gather all data we are able to find and compare the resulting picture with the situation of today, evaluating it according to current standards, and forgetting that present conditions will hardly last forever.

The Anecdotical Method.—We sketch the development of a subject emphasizing isolated, striking events and try to give thus pleasantly, in little space, the development of a subject. The method is often used in popular magazine articles dealing with gardens of the past and those who worked there. It has its merits and its danger, and it has to be handled with great care as most anecdotes are anything but authentic.

The Comparative Method.—A blend of all techniques, except the dogmatic, best suited to a specific subject. It places its subjects in their own time and leaves them there, studying the part they played in the evolution of botany and horticulture. It asks for much research and thought, and the method cannot be applied successfully unless bibliographical and enumerative studies have previously been made.

Now you will say—this is all very nice and I understand that I can get a somewhat broader view of whatever gardens may interest me by studying their history. Is it, however, really worth while to dig up all these old data? Will my effort be of any real use? The answer is yes, emphatically yes.

In the first place those in charge of botanical gardens will find it useful to emphasize their history, to preserve their historical landmarks, and to show the visitors something of the history and development of botany and horticulture generally. Experience has also shown that these activities, often in coöperation with a local historical society, attract new collaborators as well as members, and funds which would not have been available otherwise. It will also prove stimulating to many of the academic as well as the non-academic members of the staff of any botanic garden.

Besides, as we will discuss later, today's gardens look quite different from those of previous generations. Every large garden, I believe, will find it worth while to include amongst its special gardens one or more reconstructions of gardens of the past. These may be gardens as they existed in the same region, or gardens as they existed, and perhaps still exist, elsewhere (for the reconstruction of typical foreign gardens, assistance can often be obtained from regional or national societies of citizens of foreign origin).

More important still, botanical gardens, with their long history, often tend to become *reliquiae* of former centuries rather than living, contemporary institutions. Through the lack of vision of those in charge or through their preoccupation with their personal projects, they often become, particularly on the continent, stationary depositories of statuesque trees, half empty beds continued from a former generation, rusty, uninspiring greenhouses, etc. Yet, botanical gardens are living institutions, we must see them as links in a chain. How shall we know, unless we are geniuses (and geniuses split atoms, they do not work in or near botanical gardens), how the next links have to be molded, unless we are familiar with previous links?

Let us now go back to our gardens and plants and let us briefly consider the development of gardens. I do not say the development of *botanical* gardens for it is often difficult to separate botanical gardens from other gardens. In the 17th century the *professors* considered only their *horti*

medici as scientific gardens. Here, the professor of botany, at the same time a professor of medicine, anatomy, or pharmacy, and by training a physician, showed his students the plants listed in their *Pharmacopoeia.* Other plants were sometimes grown, mostly interesting plants from abroad, often unusually bulbous plants, but rarely wild plants from nearby woods and meadows.

At that same time the more substantial merchants established beautiful gardens where the seeds and bulbs brought home by their captains from faraway countries were given a trial, gardens which played an important rôle in plant introduction and which fascinate us today often more than the *giardini dei semplici.*

* * *

Of the early gardens which seem of interest from our point of view, I may mention:

Egyptian Gardens.—These are mostly courtyard gardens which have been subdivided, in a characteristic way, by little walls or rows of trees. Everything has been laid out along formal lines with an impressionistic touch. There is mostly a sunken pool surrounded by decorated pots. Many plans have been published of smaller and larger gardens of this type by the Egyptologists and their reconstruction is easy in a mild region. In most of Europe and the Northeastern U.S.A., they can be made with a slightly different kind of planting, but an Egyptian garden in the snow will always be a *contradictio in terminis* and there one will prefer a Chinese or Japanese garden which stands the extreme of the Northern climate so much better.

As to other early gardens, I may quote from notes kindly made available to me by Professor D. W. POND of Harvard University: "The *Greeks* had two types of design: first, the groves and naturalistic areas for their group gatherings and discussions, and second, their private or house gardens which were the type of design copied by the Romans at a later period. In fact several writers believe, and with considerable evidence, that the Roman type of the atrium and peristyle gardens was taken over by them after the invasion and conquest of Greece. Little was done in the way of garden design in Italy during Roman times until after the return of POMPEY and others from Asia Minor. GRIMAL, in his recent *Les Jardins Romains* has interesting data on all this.

"The *Persian Gardens*, in classic times, were the forerunners of the later type so definitely developed by the Moslems. This Moslem or Mohammedan style probably reached its height in the tenth and eleventh centuries and again in India in the sixteenth and seventeenth centuries. The designs had an influence on the Mediaeval gardens in Europe, through contacts during the Crusades which were far-reaching in their results on European designs through the introduction of geometric patterns, color, pools, pavilions, and other features. Moslem design principles are also dominant in the Spanish type with the enclosed courtyard or patio, like the gardens carried out in Persia during the same general period, some of which still exist with their large, shallow pools, little water channels, and very characteristic manner of planting. I am wondering if the Moslems, because of their love of color, fragrance, and the purely aesthetic pleasures to be derived from various kinds of flowering plant material, may not have been among the first since classical times to undertake what we now call the botanic garden; I have no evidence one way or the other."

Of the various types of *Roman Gardens*, so well described by PLINIUS, CATO and COLUMELLA, atrium gardens are most easily reconstructed. They and their plants are beautifully shown on wall paintings in Pompeii, and worth-while reproducing in any subtropical region. The fine Roman villa gardens, like PLINIUS's Villa Tusci cannot be reconstructed well, as, in the case of certain other types of gardens of the past, their extent is prohibitive, and they can be shown more easily in a diorama in our museums. A very fine, small-scale reproduction of PLINIUS's Villa Tusci has, *e.g.*, recently been made at the University of Cambridge, England.

Much is known about the *Mediaeval*

Gardens of the Old World. They have been studied in detail by art historians, historians of culture and historians of science, they are clearly shown in numerous paintings, tapestries, manuscripts, *livres d'heures*, etc. They are fairly uniform in design, mostly walled, with lattice or willow fences, the beds and seats are raised, and not difficult to reconstruct. Plant lists are available. A special type of mediaeval gardens are the monastery gardens, of which excellent plans exist; with their small, regular, raised beds they seem the prototype of the later *hortus academicus.* Castle gardens were larger, whenever space permitted, often bordering on an orchard, meadow, or fields for games.

From the castle gardens we come to the *Renaissance Gardens.* As all good things which delight our heart, they are not easy to characterize with a few words, but this is hardly necessary as the great Renaissance artists have shown them so well in their paintings. They are extensive, often very extensive, divided into smaller square gardens, most of these separate parterre gardens subdivided according to intricate patterns, each of them laid out with great, often exaggerated craftsmanship. A fairly large number of species is grown, but trees are limited. The wealthy Italian princes developed the most beautiful and extensive gardens of this type between the 15th and 17th centuries. Their English counterpart, the *Elisabethan Garden,* is smaller, often consisting of a single parterre, and mostly divided by box or other low hedges in a knot garden. The garden is surrounded by a characteristic pergola or balustrade. These Elisabethan gardens so often mentioned in SHAKESPEARE'S plays are easy to design but difficult to keep up in regions where its characteristic species are not hardy. For a number of years the Shakespeare garden in the former Harvard Botanical Garden at Cambridge, Mass., attracted much attention. Yet, the influence of KITTREDGE, Harvard's great and inspiring authority of Elisabethan times, seems not to have been as strong as the New England winters and the Elisabethan garden disappeared from the Hortus which made, in due course, place for a block of 'Harvard Apartments' showing the fate which befalls a garden that became separated from the community it once served.

In this same period *Botanical Gardens,* in the modern sense of the word, were being established in Italy and other European countries. The early botanical gardens look very much like simplified Renaissance gardens, they consist only of four groups of beds which form a simple parterre, on one side there is often a pergola and in the center a simple fountain, statue or arbour. Of all old botanical gardens I like the circular gardens best, as they can be reconstructed in such a delightful way.

The Padua Gardens of 1590 were, with great changes, reproduced in the Royal Botanical Society Garden at Regent's Park and later in various school gardens. I saw them once redrawn, in a French art journal, by a French garden designer—there they looked almost as if made for a CORBUSIER designed estate.

Chinese and Japanese Gardens are essentially mediaeval but represent the spirit of symbolism and impressionism, which is, at the same time, always old and modern. They can be reconstructed in many climates, asking for intricate landscaping on a small scale, stonework, certain characteristic small buildings and bridges in addition to the planting which is more limited than in most other gardens but not easy. The dwarf trees particularly are hard to grow for our hasty, modern gardeners. At one time Chinese elements were introduced in European garden design, this resulted in a special style of which we still find remnants in many botanical gardens, including Kew.

You all know the main periods and styles which the landscape architect distinguishes for the gardens after the Renaissance:

The French School, so well known from LE NOTRE'S creations: large parks, boldly designed, with a diversified planting, and large, regular artificial lakes. This style has influenced our botanical gardens little.

The Dutch School, known from the famous merchants' gardens along the Am-

stel and Vecht rivers. The gardens are smaller than the French gardens, more species are grown, there are extensive orangeries where many plants from the Cape, East and West Indies were tried out. The trees, often sheared, are closely planted and small buildings (for drinking tea, making love, and isolating those suffering from a contagious disease) are abundant. This type of gardens gave the 17th and 18th century botanical gardens its conservatories (of the orangery type, with a tiled roof, without glass) and many notable introductions.

The English Landscape Gardens, of which again many types exist, the naturalistic garden designed by PRESTON, Prince PÜCKLER and others. These gardens gave us our arboretums in the strict, classic sense of the word, *i.e.*, botanical gardens which have been landscaped according to naturalistic principles and planted chiefly or only with trees and shrubs.

The larger gardens at this time had winter gardens in large glasshouses, from which our botanical greenhouses and conservatories are derived.

In the 19th century, with the distribution of wealth over an increasing number of citizens, gardening became popular in Victorian times. The typical *Victorian Garden* matched a Victorian residence in artificial design, much clipping, bizarre beds, and a generally unquiet effect. This style, as may still be seen in many small university botanical gardens on the Continent, did not fail to influence our botanical gardens. With romantic elements from GOETHE'S time, some of these gardens may still have a certain charm, the same kind of charm as that of pretty girls, in a musical comedy, dressed as our great-grandmothers in their youth (see, *e.g.*, the print of the old Zürich Garden reproduced in CHRONICA BOTANICA 10, plate 32).

It has been interesting to note that botanical gardens and arboretums never had a style of their own. Of course, they could always be recognized by the great variety of species grown, on the one hand, and the open spaces where nothing was grown on the other, but their design and style has always been adapted from the gardens of the time, whatever the demands of science and horticulture may have been.

Minor innovations, whatever their merits, in gardens and gardening generally were quickly adopted by botanical gardens, such as rock, wall, marsh, and rose gardens.

* * *

This has been a very sketchy account of the gardens of the past. Contemporary botanical gardens often consist of several separate, specialized gardens and, though this may not be an ideal condition from the designer's point of view, the needs which a modern botanical garden, now often called an arboretum, particularly in North America, has to fill are so manifold that they ask for a composite garden which offers the designer some intriguing problems, problems which were also found and brilliantly met in the design of the larger, diversified, late Renaissance gardens. I believe that the late Renaissance garden offers a better basis for a "modern arboretum" (in the wide sense of the word) than the naturalistic or so-called English landscape garden which adapts itself so well, as PÜCKLER and OLMSTED have proved, to the arboretum in the strict, classic sense of the word.

In certain cases, the reconstruction of specific gardens, which had almost or entirely disappeared, has been very successful and inspiring. Noteworthy examples of such reconstructions are the *Hortus Linnaeanus* at Uppsala, the Colonial Gardens now being reconstructed, with such loving care, at Williamsburg, Va., the *Hortus Clusianus* in the Leyden Garden, and "Lucky BALDWIN'S" adobe and garden on the grounds of the new Los Angeles State and County Arboretum.

There also exist many good plans and prints of early medicinal plant gardens which makes their reconstruction fairly easy.

These days, many botanical gardens want to include "Bible-plant gardens" and "herb gardens." The latter can easily be patterned after certain Elisabethan gardens, but in the making of a Bible-plant garden, the lay-out should not be made according to the principles we discussed.

If done properly, a Bible-plant garden should be primarily an ecological or plant geographical reconstruction (for the species to be grown, the biohistorians' advice, conflicting as it may be, will of course be essential).

Prints of all older gardens should be examined and interpreted with care, each period does not only have its own style of garden design, but also its own style of reproduction. It is quite possible to draw the same garden, let us say, a monastery garden, accurately according to three different styles, with the result that it may look on one drawing as an oriental garden, on the second one as a modern formal garden and on the third one as a simple Renaissance garden. This is just one of the many problems of historical criticism to which I referred earlier. Much greater difficulties arise from the old planting lists.

Scientific reconstruction demands that we do not only follow the style of early gardens, but that we plant the same varieties. Some geneticists have made a special study of early varieties in certain genera. Other varieties, which are known from the flower paintings of the Renaissance, Dutch and English schools, have disappeared. Sometimes, they can be bred again but mostly we will have to use other, related varieties. This is not serious, as long as we state so clearly in our descriptive accounts. The interpretation of classical and mediaeval plant names remains very difficult, and the accurate reconstruction of the earlier gardens offers the historian, the horticulturist and geneticist some interesting, coöperative problems. The history of early botanical gardens runs so parallel to the history of early cultivated plants that the two should always be considered together.

There are many old and new types of smaller gardens, not referred to above, e.g., Spanish and Mexican Patio Gardens, which can be imitated easily and successfully in many climates, as shown by our plate of the Spanish garden at the 1952 Royal Horticultural Society's Show at Chelsea. North American Colonial gardens, ranging from the simple, fenced New England and the Charleston walled garden to the landscaped Southern gardens and the intriguing California monastery gardens, offer the American botanical gardens rich possibilities which have hardly been considered, as yet. Early European Farm and American Indian Gardens, simple as they may be, offer other possibilities and tie in with other interests.

The cost of the reconstruction and upkeep of historical gardens is high, often one will need extra funds and will have to interest groups which did not contribute hitherto to one's garden budget to make them possible.

Recapitulating we may say: (1) it is quite worth while to study the history of our own Botanical Garden and of other gardens of the past, (2) this study will reward us with new and useful ideas about historical landmarks which may be emphasized and reconstructions which will profit all concerned, and (3) above all, it will give us new ideas about the future of our own garden, about new relations between the living plants, the herbarium, the books, research, education and extension work.

A botanical garden or arboretum remains one of the few places on earth where those engaged in the study and cultivation of humanistic and scientific values may meet and should be made to meet. CLIFFORD HARRISON expressed it with better words than I can find:

More than a pleasance is a garden-plot;
No playground merely, no sequestered grove;
Gardens have been, since man's primeval lot,
The scene of thoughts on which the ages move . . .

Waltham, Mass., U.S.A.
July, 1953.

COMMONLY CULTIVATED SPECIES OF FUCHSIAS

ALFRED C. HOTTES

(*Few'shi-a,* or in Europe pronounced *fooks' i-ah.* Named for Leonhard Fuchs, German professor of medicine and botanical author, 1501-1565. Family Onagraceae, related to Oenothera, Evening-primrose.)

There are more than eighty species of Fuchsias growing mainly in Central America, several in New Zealand, but the usual gardener thinks of *Fuchsia hybrida.* It is the name to which a multitude of varieties have been assigned. They are generally derived from *M. magellanica* and a larger leaved and larger flowered species *F. fulgens,* from Mexico. For a discussion of the vast array of varieties and their culture, refer to:

Alfred Stettler, *"The Fuchsia Book,"* American Fuchsia Society.

E. O. Essig, *"Fuchsias," The National Horticulture Magazine,* Jan., 1934.

Philip A. Munz, *"A Revision of the Genus Fuchsia,"* California Academy of Science, 4th series, Vol. 25, No. 1, 1943. This is the most comprehensive discussion of species.

H. M. Butterfield, *"Hints on Growing Fuchsias,"* a leaflet from University of California, Berkeley.

"A to Z on Fuchias," California Fuchsia Society, a very complete list of variety descriptions with cultural hints.

SPECIES

This story covers only a few of the most commonly cultivated species of Fuchsias. Generally they are small flowered and some are pot plants because of their small size, others are tall and well adapted to use in the landscape.

1. *Fuchsia boliviana.* Bolivia Fuchsia. Grows 10 feet tall. Flowers with very long, dark red tubes; sepals dark red, lanceshaped, turned back; petals dark red, erect or divergent, pistil scarcely reaching the tip of the sepal. Leaves elliptical to oblong-lanceshaped, soft pubescent on both surfaces, 12 to 24 principal veins on each side of midrib, sometimes 7 inches long. Fruit an oblong-elliptical berry, nearly an inch long, dark purple.

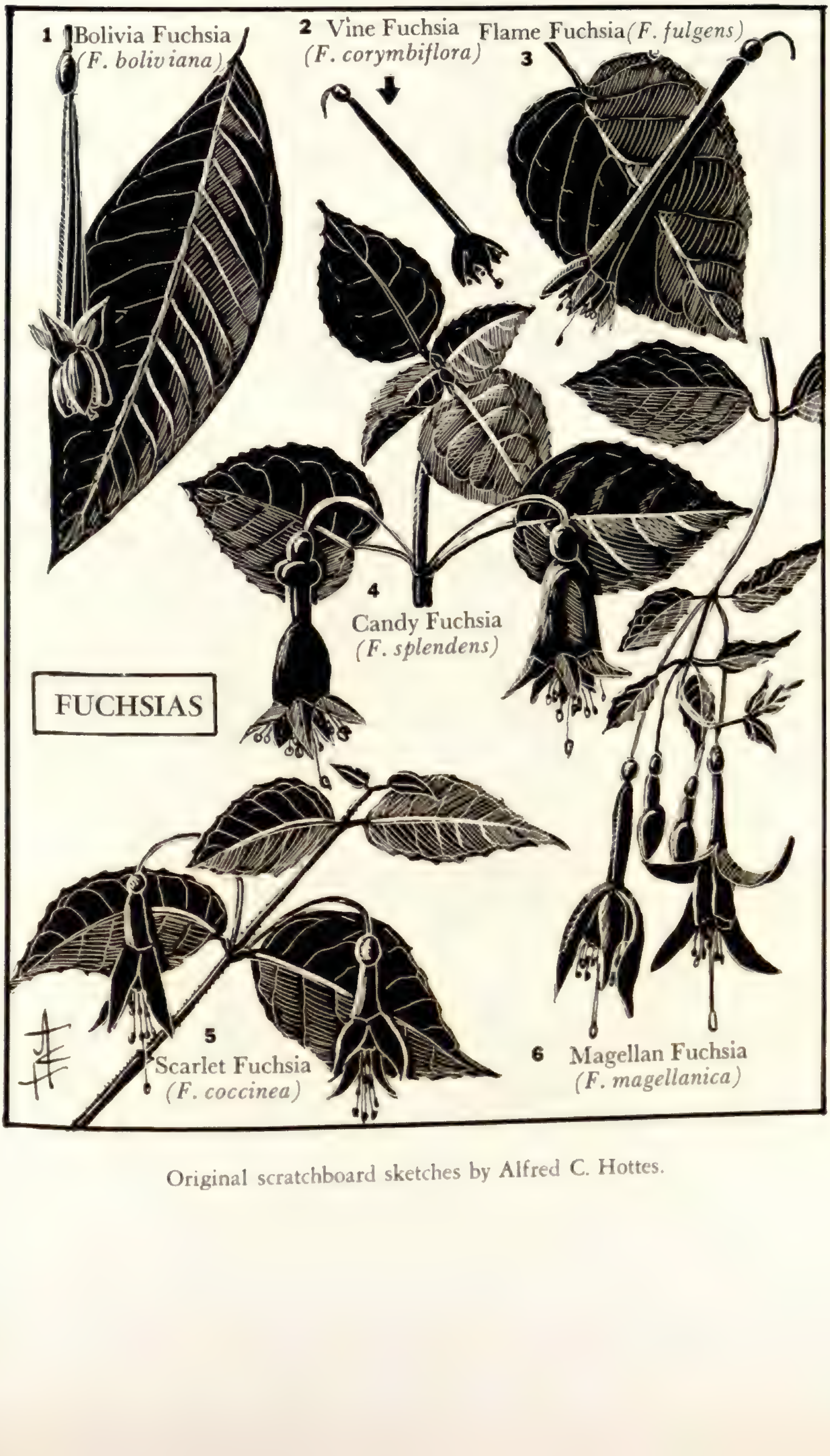
2. *F. corymbiflora,* Vine F. The flowers are also very long and dark red, but the sepals are erect, and only flaring, not turned back, and the pistil protrudes from the flower. Leaves velvety, almost the same as *F. boliviana,* but with 14 to 16 veins on each side of the midrib, and with a prominent vein close to the outer margin of the leaf.

3. *F. fulgens,* Flame F. Flowers with dull red tubes; sepals dull scarlet, green tipped; petals dazzling scarlet; stigmas pink, green tipped. Leaves broad-oval, often heartshaped; ten lateral veins on each side of the midrib, petioles and midrib red.

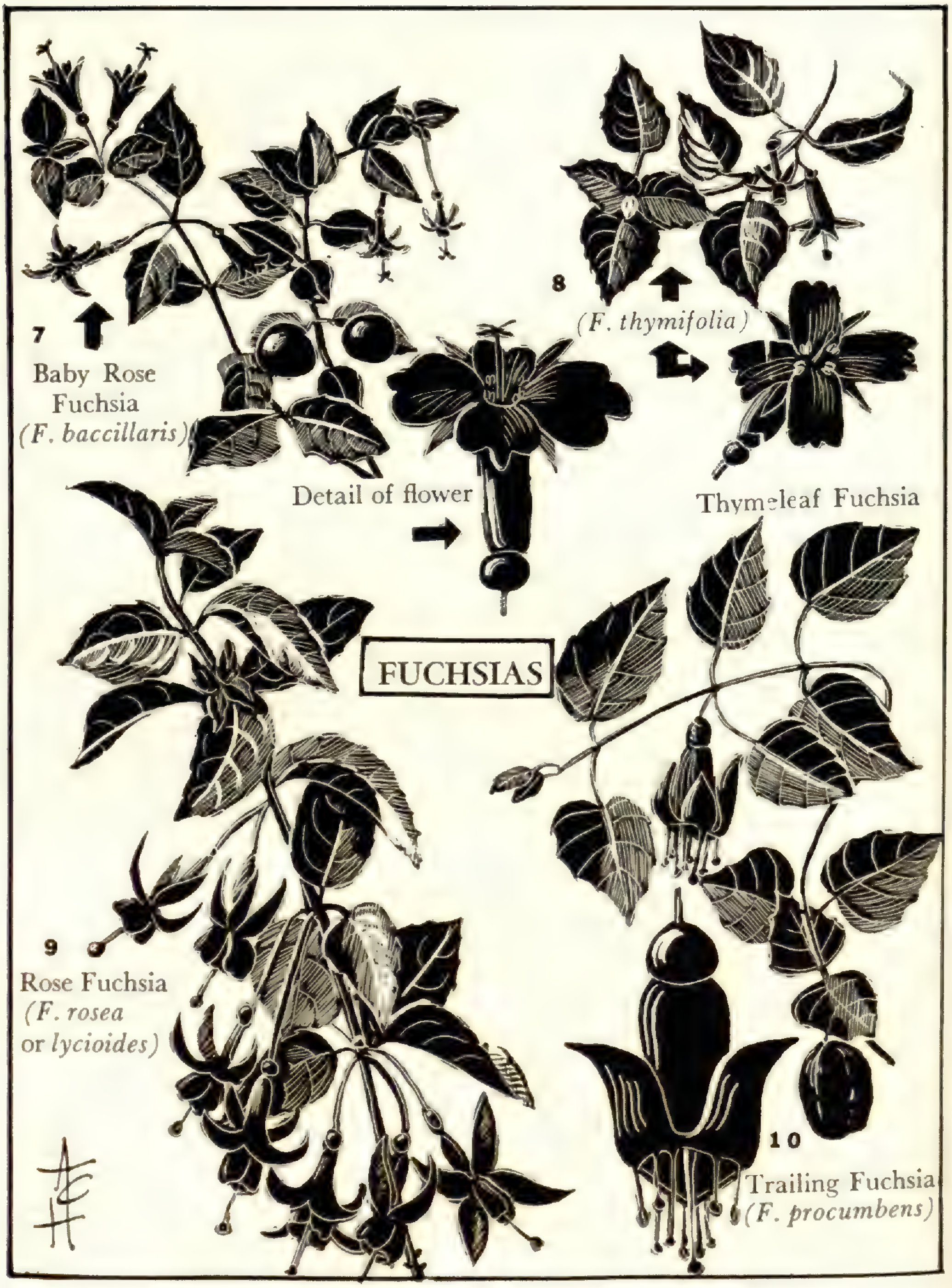
4. *F. splendens.* Candy F. Flowers with dull red sepals and tube, but with small, greenish petals; stamens long, protruding. Flowers are flattened on two sides which explains the difference in appearance of the two flowers shown in the illustration. Leaves broadly oval, to 5 inches long.

5. *F. coccinea.* Scarlet F. Flowers with scarlet sepals that are pendulous, not flaring, almost hiding the shorter red petals; solitary in the upper leaf axils; 4 stamens are long and 4 are shorter. Leaves ovate or lanceshaped, slightly reddish midribs; pubescent above and below.

6. *F. magellanica* (*macrostemma*). Magellan F. Flowers with red calyx and blue-violet petals, 1 to 2 inches long; stamens and pistils protruding. Leaves smooth or finely pubescent, ovate-lanceshaped, 2 inches long, with rounded teeth. Hardy varieties have been developed and most of the plants can freeze to the soil



Original scratchboard sketches by Alfred C. Hottes.



Original scratchboard sketches by Alfred C. Hottes.

in which case they sprout from the roots.

7. *F. baccillaris,* Babyrose F. Flowers with rose sepals and petals; 1/4 to 3/8 inches long; stamens included but pistil protrudes. Leaves small, less than an inch long; teeth sinuate. Fruits spherical, about 1/4 inch in diameter.

8. *F. thymifolia,* Thymeleaf F. Flowers solitary, axillary, white to pink, about 1/2 inch long; petals notched; sepals sharp-pointed, white turn red. Leaves opposite, sometimes alternate, ovate, blunt or sharp-tipped, 3 to 5 pairs of lateral veins, about 3/4 inch long.

9. *F. rosea* (*lycioides*), Rose F. Flowers purple-violet, about 1 inch long, axillary; sepals strongly reflexed; very profuse blooming; tube and sepals more reddish. Leaves oval to lanceshaped, more or less acute, entire, 1 inch long. The leaf bases are protruding, almost like prickles. One of the best tall Fuchsias for landscape use, almost 10 feet tall.

10. *F. procumbens,* Trailing F. Does not seem like a Fuchsia, flowers are not showy, pale orange with purple calyx lobes, green at the base, petals lacking, solitary, often erect. Leaves roundish, ovate, generally alternate, 3/4 inch long. Berries more showy, black, almost the size of an olive. Makes good hanging basket.

F. arborescens (*syringaeflora*), Lilac F. (not illustrated.) The casual observer does not realize that this is a Fuchsia. It is a treelike shrub from Mexico, sometimes 18 feet tall, which produces a great mass of foliage and flower clusters suggestive of Lilacs. The branches, petioles, and veins are sometimes red. The flowers are pink or purplish, only 1/2 inch long, produced in erect, terminal panicles, from January to April. The leaves are opposite, or in threes, lanceshaped, oblong, to 8 inches long. It stands more sun than most sorts.

LEONHARD FUCHS, M.D.

The following *vignette*, of Leonhard Fuchs after whom the Fuchsia was named, was written by Mrs. Floyd Betts, Research Student of Old Herbals at the Huntington Library, San Marino.

BOTANIZING was becoming popular in the sixteenth century. Travelers, venturing into strange lands, were fascinated with the new and exotic flora they discovered and proudly presented what seeds and plants were obtainable to the royal gardens of their homeland.

Superstitions surrounding herbs and flowers were fast being dispelled by scientific data. Simples were losing their "signatures."

To four great German scientists of this age we accredit the title—Fathers of Botany: Brunfels, Jerome Bock (Hieronymous Tragus), Fuchs, and Valerius Cordus.

Reared by a nature-loving grandfather, young Leonhard Fuchs enjoyed his early boyhood learning the names and growing habits of wild flowers about the village of Wemding, Bavaria. Having exhibited rare scholastic tendencies by the age of ten, he was considered ready to enter the school of Meister Conrad in Heinbronn to be prepared for the University. Leonhard was but twelve years old when he was admitted to the University of Erfurt. Four years later when he received his degree, his amazing erudition won him an appointment as instructor.

Still yearning for greater knowledge, he entered the Medical School at the University and graduated as Doctor of Medicine in 1524—then only 23! For the next twenty years he was renowned as a practicing physician, Professor of Medicine and lecturer.

His early love of flowers, now enriched by scientific credenda, became the guiding theme of his writing which he published as an herbal in 1542. This first edition was entitled *De historia stirpium commentarii insignes.* The following year a slightly revised copy in German was published under the title *New Kreüterbüch.* On the inside of the title page appears a full-length portrait of Dr. Fuchs—a duplicate

LEONHART FUCHS (1501-66)
[De historia stirpium, 1542] Reduced.
Courtesy of The Huntington Library and Art Gallery

of which accompanies these biographical notes.

Being the most extensive and impressive work of its kind, his herbal won immediate acclaim and wide recognition. The text was arranged in alphabetical order; each plant was indexed in Greek, Latin and German with a detailed description of its characteristics. Chosen to illustrate this colossus were two skilled draughtsmen, Heinrich Füllmaurer and Albrecht Meyer, whose 511 authentic woodcuts so eclipsed any botanical sketches yet attempted, that they continued to appear in other herbals for decades to come.

On the seventh of May, 1566, death quietly climaxed the life of this beloved naturalist whose obsession from boyhood had been to instill into the hearts of his pupils and his own children a keener appreciation of nature's wonderland. What more befitting epitaph than lines from his herbal:

"There is no need for me to set forth to the multitudes the pleasure and delight afforded by the knowledge of plants, since there is none but knows that there is nothing in this life more pleasant and delightful than to wander through the woods and over mountains and fields wreathed and adorned with a variety of the choicest flowers and herbs, and to gaze on them attentively. This enjoyment and pleasure is in no small degree enhanced by knowledge of their properties and powers: for real understanding doubles the charm and delight of vision."

NOTE: In modern anglicized version this botanist's name may be spelled Leonard Fuchs, but between the 16th and 20th centuries it may be found in botanical literature variously spelled: Leonhardt or Leonhard Fuchs, or in the Latinized form, Leonerd Fuchsius.

"If we knew all the laws of Nature, we should need only one fact, or the description of one actual phenomenon, to infer all the particular results at that point. Now we know only a few laws, and our result is vitiated, not, of course, by any confusion or irregularity in Nature, but by our ignorance of essential ***elements in the calculation. Our notions of law and harmony are commonly confined to those instances which we detect; but the harmony which results from a*** *far greater number of seemingly conflicting, but really concurring laws, which we have not detected, is still more wonderful. The particular laws are as our points of view, as, to the traveller, a mountain outline varies with every step, and it has an infinite number of profiles, though absolutely but one form. Even when cleft* ***or bored through it is not comprehended in its entireness."***

From "Walden"—HENRY D. THOREAU

THE CALIFORNIA INTERNATIONAL FLOWER SHOW 1954

From pre-Flower Show announcement notes by Charles Levitt

ALTHOUGH THE DATES of the California International Flower Show at Hollywood Park, Inglewood—March 13th through 21st—necessarily make this a post-dated report, the readers of *Lasca Leaves* undoubtedly will be interested to note the themes and special features of this year's "diversified and floral extravaganza" as it was advertised in pre-show announcements. The Spring, 1953, issue of *Lasca Leaves,* Vol. III, No. 2, may be referred to with regard to the history of this phenomenal flower show project and its progress since its initial opening in the spring of 1949.

Outnumbering its former landscape exhibits on the first floor, this year's show carried 34 of these displays including arresting and attractive features such as small houses, their patios, well-proportioned waterfalls, swim pools, and all manner of flowering shrubs and trees to enhance them.

Four orchid gardens formed a unit exhibit: one contained prize-winning cymbidiums from the Santa Barbara area; another, a large collection of rare phalaenopsis orchids from one of the world's finest collections—pure white flowers among them measuring up to five inches across. Other assortments of orchids both in this exhibit and under other classifications drew admiration from attending crowds.

One of the favorite areas was devoted to tropical gardens showing the use of appropriate flowers and plants in an interesting indoor-outdoor combination of living surroundings. Camellias, azaleas, tree ferns, ceramic planters, and the use of cork-bark and grape roots, indicate the wide variety of materials used, plus one garden accented with an aviary for parakeets and other exotic birds. Included here was a curiously interesting exhibit showing 500 plants in a volcanic setting; and a 3-dimensional world globe showing where tropical plants grow.

Cool climate exhibits were also a feature. Of spectacular appeal one scene was scheduled to depict "springtime in England . . . with more than 15,000 flowering trees and plants including 50 varieties of flowers grouped around a caretaker's cottage, terraces, fountains and with the mansion of the estate in the background." A "Garden of Meditation" was planned to feature roses in a Colonial Church setting; "An Old Gardener's Fantasy" was a "spring dream garden"; an authentic Mexican jungle; a mammoth display of "tulips and daffodils from the northwest in a setting of birch, cedar, hemlock and fir trees against a snow white mountain backdrop"—all these and many other ideas were beautifully carried out in the interest of the Americas and other countries, giving glimpses of floral life in faraway lands.

All of this was on the first floor level of the exhibition structure. On the second floor, education exhibits, especially "of Mexico with authentic village and art pieces and the splendid tropical specimens of that area; . . . and a vast area dedicated to a garden shopping center showing implements, tools, garden food, equipment and furnishings."

So large is the area devoted to the California International Flower Show that ample room is provided for rest and serving food. At the north end of the main floor level is "a large auditorium seating more than 600, from whose stage may be seen various shows, programs by our foreign exhibitors and by leading industries, as well as lectures, color films, and demonstrations of flower growing, arranging, and landscaping."

This picture presents tempting fare to look forward to another year and it is hoped that many *Lasca Leaves'* readers—perhaps far away at present—may visit California's southland during the spring of 1955 and following years to see this impressive pageant for themselves.

"TEDDY BEARS AND EUCALYPTUS"

TED HOLDERNESS

AS A CHILD I had one, a Teddy Bear, that is, and most adults today remember these cuddly little toy animals playing a prominent part in their young childhood.

Today in the San Diego Zoo may be seen an exhibition of these little animals in the flesh. Young and old alike who visit these furry little creatures are immediately won over to them. Their impassive, yet appealing, quizzical expression and mild lovable temperament elicit explanations of endearment by every visitor who views them.

The history which lies behind these Teddy Bears and their introduction into the San Diego Zoo is the purpose of this article . . .

It has been a keen desire of Mrs. Belle Benchley, Director of the San Diego Zoo, to include in their extensive collection an exhibition of the Australian Koalas as they are properly called. It has been my pleasure and privilege to know and work with Mrs. Benchley for many years and I had heard her enthusiastically dream of Koalas perched in the Eucalyptus trees of the Zoo. By coincidence, and through our friends at Paramount Studios I heard of a forthcoming production called "Botany Bay," based, as authentically as possible, on the exploration of Captain Cook, the 17th century discoverer of Australia and New South Wales. Mrs. Benchley and the Production Department of Paramount were introduced and together the project got underway. Due to near extinction, the Koalas were wards of the Australian government and an embargo had been placed on them in the early 20's. The details of how this was worked out by Mrs. Benchley and the Studio Management and the many cooperative people in Australia is far too involved for this paper. The important fact is that they were generously shipped to the U.S. under the care of San Diego Zoo.

To leave the field of Zoology and take up the interest of the readers of this Newsletter, we will recount the Horticultural aspect of the Koalas. Nearly their entire life cycle of 20 years is spent high atop the swaying upper framework of the Eucalyptus. Not only does this Genus serve as home but also provides the Koala its entire dietary requirements. They feed exclusively on the tender young shoots and leaves of certain varieties from which they also are supplied their water needs.

Their eating habits do not include all varieties but with a certain fussiness of taste they prefer *viminalis, rostrata, punctata, melliodora* and *cornuta.*

As the two basic requirements necessary in moving them halfway around the world to a new habitat were climate and availability of food, these were the primary factors of the project. Obviously the mild climate of our own San Diego completely solved the first requirement. The second one consisted of supplying the proper varieties of Eucalyptus both for food and a home.

As *Eucalyptus cornuta* var. *Lehmani* was available in the immediate area and the Koalas readily ate its tender foliage plus the fact that its mature size is moderate, it was decided to use this Eucalyptus as the Koalas first home and breadbasket in America.

It was felt that the proper display of these little fellows was where everyone could see them at close range as they sit placidly munching their Eucalyptus salad. So a special compound was provided where visitors may view from all four sides. What was needed now were two *Eucalyptus Lehmani.*

To box and transplant 2 mature trees averaging 35′-40′ in height and spread was the next order, with the provision, of course, that such transplanting would insure the continued growth of the trees.

Here is an example of the old saw—"Fools rush in where angels fear to tread"—and so we did.

The two trees selected were thinned out in their secondary framework approxi-

mately 50% . . . A 12′ square 'ball' was marked off and the four sides were trenched 3′ wide 4′ deep. These trenches were flooded to facilitate digging and force moisture absorption through the root system. It had been the original intention to side prune and side box before final lifting but as the size of roots cut were not in excess of 2½ inches and after several days of observation there appeared to be no flagging of the young succulent terminal buds, we continued shaping, side dressing and finally bolted the sides in place. This left a net 9′ ball which was certainly an overboxing considering the plants had only 10″-12″ stem caliper, but this was done as a precautionary measure in a rather blind approach.

Ten days later with no signs of wilting we undermined and began slipping in the bottoms. The so-called soil of this area is not to the credit of San Diego and is definitely no help in tree boxing, but through sweat and stubborness we outfought the rocky subsoil. The top of the boxes were planked with skids and top stringers in place, we secured the balls.

The trees were transplanted to holes 20′ square and 6′ deep, backfilled with a one-half mixture of topsoil and decayed elephant manure and straw. Boxes were left, only the top planking and stringers were stripped. The backfilling was accompanied with heavy watering and flooding to exhaust all air. The root crowns were purposely planted ten inches high to insure drainage away from the crowns and preclude the possibility of water and mold infections.

Over a year has now passed and the trees show every evidence of being happy and vigorous in their new locations. . . .

COVER PICTURE

The Old Adobe is one of the three historical structures still standing within the Arboretum's 120 acres. As may be seen in the photograph, it has the basic exterior lines of a modern ranch house even though it itself is "well along in years." Built in 1839 by Hugo Reid, it served as the home of every other owner during subsequent years. Originally protected by a lovely old shake roof, it is now covered with tile roofing and its sturdy walls are 24 inches thick; at one time a porch extended entirely around the house. A wooden addition called the annex was added on the west side by "Lucky" Baldwin in 1879. This famed personage of the latter 19th entury had a home in San Francisco but whenever in southern California during his tenure of ownership of this land, he made the Adobe his abode—where indeed he died in 1909 at the age of 81. The building sets back about 15 or 20 feet from the edge of a lagoon where wild ducks and other water birds still add charm to the setting. The view here shows the south and west sides of the Adobe and annex, shaded by a Camphor Tree (*Cinnamomum camphora*)—native to China and Japan—and accented by a group of California native palms (*Washingtonia filifera*). The building is in line for complete restoration in the near future and should continue, for many years to come, to add local color to the Arboretum grounds.

CINNAMOMUM CAMPHORA

Charles Francis Saunders in his *Trees and Shrubs of California Gardens* (Robert McBride and Company 1926)—now a book collectors' item—presents some charming pictorial and historic notes on the advent and distribution of *Cinnamomum camphora* (*Camphora officinalis*) in the southwest. Because Mr. Saunders' writings are filled with intangible nuggets of thought and asociation, persisting in the memory like long-cherished conversations which one vaguely endeavors to recall, it is difficult to make excerpts without destroying the continuity. The following quotation scarcely does justice to the glowing two-page-and-a-half description of this tree from the Orient which has settled itself so picturesquely in city streets of the southland: "In late winter and early spring the ripening leaves turn to tones of yellow, orange and crimson, and dropping to earth bespangle it with a motley of color—an interesting instance of the fall of the leaf in spring. At the same time the buds of the new leaves in tender pink begin to open, and soon the whole tree is suffused with a rosy glow of such an entrancing loveliness as we associate with flowers only . . ."

* * *

Further reference to this exotic immigrant to our shores may be found in the *National Geographic Magazine*, March, 1920, under "Formosa the Beautiful," an article by Alice Ballantyne Kirjossoff.

GARDENING EDITORS

The California southland recently entertained a group of visiting editors representing outstanding gardening magazines of the nation. A program outlined to acquaint them with significant horticultural activities in this part of the country included attendance at the monthly meetings of the *Men's Garden Club of Los Angeles*, and the *Southern California Horticultural Institute*; also the opening of the *California International Flower Show*, Inglewood; and tours of the Huntington Botanical Gardens, in San Marino, and the Los Angeles State and County Arboretum, Arcadia.

Acacia cardiophylla in full bloom, 5′-6′ high and 3′-5′ across, in a 30-foot border planting, showing use as a broad hedge plant.

GROWING NOTES

GEORGE H. SPALDING

ACACIAS are the harbingers of spring in Southern California. As this is written (March 1st) many of the species have passed their prime but others are just reaching their peak. Most of the species bloom from December to March, but *Acacia subulata* has been in continuous bloom for nearly two years.

The Arboretum's collection of more than 100 species offers a fine opportunity to observe and select those species which perform best under our conditions.

There is wide variation in type of foliage, height, and habit of growth, so that there should be an Acacia species suitable for nearly any planting situation. It is true that the majority are relatively short lived but for sheer mass of color there are few plant groups which can compare with them.

The first Acacias were planted at the Arboretum about three years ago so they are by no means mature. However, several species are showing considerable promise as garden and landscape subjects. Some notes on these species will be of interest to our readers. Many Acacias will bloom in two or three years from seed so they will be useful for quick effect.

One of the loveliest of the small Acacias is *Acacia acinacea,* the Gold Dust Wattle. Four year plants are 3′-4′ high and many branched. The form is open and loose. This year they will be pruned heavily after flowering to try and produce more dense growth. The phyllodia are

small and dark green, the flowers clear lemon yellow, borne singly or in pairs in the axils of the leaves, and very fragrant. They are growing in very heavy soil and receive only a moderate amount of water. Reports from Australia say it is a good garden subject under all conditions, particularly in heavy soils and dry climatic conditions. Our experience with it seems to bear this out. A fine species for the small backyard *where it will not be overwatered.*

A. cardiophylla from New South Wales has proven one of the finest for an extremely dry situation. Four year old plants are 3′-4′ high and 4′-5′ through, dense and full to the ground. They are in a sandy soil and are watered only occasionally during the summer months. The foliage is fine and fern-like always presenting a neat appearance. The flowers are butter yellow and completely cover the plant. It stays in bloom for about three months. While not one of the most spectacular, it is a very satisfactory and worthwhile species.

Another outstanding species is *A. linearis.* One of the older plants in our collection is now in full bloom. It has the appearance of a *Podocarpus elongatus* smothered in a mass of pale yellow. This plant is now four years old, 10′-12′ tall and 6′ across. The foliage resembles Podocarpus as mentioned above and is the same clear medium green. It has had just average care and seems to be very adaptable. This is the first year it has flowered but was well worth waiting for. For form and foliage this is outstanding.

Reference should also be made to three previously mentioned in Growing Notes, i.e.: *A. saligna,* Vol. III, p. 7; *A. vestita,* Vol. III, p. 8; and *A. steedmani,* Vol. III, pp. 29-30, Vol IV, p. 18. This last is a flash bloomer, being at its best for only a week or so.

Additional species will be discussed in later issues—the bad as well as the good —since it is our desire to provide reliable data from first-hand observation.

BIRD NOTES

W. Dan Quattlebaum

The annual National Bird Count was made at the Arboretum December 29, 1953, by Miss Fern Downing and her group of young "birders." A total of 44 species and about 320 individuals, including the gray-headed Junco, a new bird for our check-list, were observed.

Spring came to the Arboretum early this year. The Mourning Dove has been cooing and the Mockingbird, California Thrasher, Bewick Wren, Redwing and Song Sparrow have been singing since January 15. The gentle spirit of the singing, flowery spring has also come upon members of the Staff. Two of them have acquired albums of song-bird records, and often have private concerts.*

Some of the Staff are having interesting experiences with their bird cafeteria just outside a window. Among their guests were the Brown Towhee, Gambel Sparrow, Golden-crowned Sparrow, Oregon Junco and Slate-colored Junco, which is a rare bird for our area. And this gives the Arboretum the Oregon, Gray-headed and Slate-colored Juncos for this season.

*The National Audubon Center, 664 North Durfee Ave., El Monte, Calif., offers an album of 6 records containing 72 songs for a very moderate price.

CHARLES GIBBS ADAMS

The Trustees of the California Arboretum Foundation have a grevious loss in the death of their friend and associate, Charles Gibbs Adams, who helped to found this institution and to maintain it with unfailing generosity and intelligence. We hereby extend heartfelt sympathies to his sister, Miss Rachel Adams.

Charles Adams' place cannot be filled, his contribution will not be forgotten. Be it resolved, and recorded in the Minutes of the California Arboretum Foundation, that the Adams historical garden plan be mounted and displayed in the Arboretum Administration Building, for frequent future reference.

Dr. Samuel Ayres, Jr.
President, Board of Trustees
California Arboretum Foundation, Inc.

Jan. 19, 1954

* * *

"Paltry though . . . success may seem to those who are able to dream of higher goals, a great many individuals have failed to achieve it. The adaptations which have enabled some to succeed are the most marvelous phenomena in the world. They are also the most mysterious."

From *Patterns of Survival,* p. 45, by John Hodgdon Bradley.

NAMES, NOTES AND NEWS

DR. EPHRAIM HAREUBENI

PROFESSOR H. R. OPPENHEIMER
Faculty of Agriculture, Rehovot, Israel

DR. EPHRAIM HAREUBENI (Rubinovitch) who deceased a month ago, was lecturer in Biblical and Talmudic Botany at the Hebrew University. His research was both biblical and botanical, and there are few persons whose knowledge embraces both fields and who are competent to appreciate his achievements.

Born at Novomoskovsk in Russia, in 1881 Hareubeni immigrated, as it seems, at the beginning of the century. Wandering about in the arid south, the Hauran, and in Palestine both east and west of the Jordan, he acquired an unusual knowledge of both wild and cultivated plants, and of the habits and language of the rural population. Thus he became competent to interpret debatable plant names, ambiguous phenomena in nature and symbolic expressions mentioned in the scriptures. It should be recalled that too often such exegetic endeavours by both Jewish and Christian authorities are mere speculations conceived in their study-rooms.

Whoever visited the Hebrew University on Mount Scopus in the thirties was sure to meet here this beardy, delicate Jew with his blue, naive eyes and his enthusiastic falsetto. Together with his inseparable companion, Mrs. Hannah Hareubeni, he worked indefatigably in his sanctuary, the Museum of Biblical Botany which formed one of the main attractions, for local and foreign visitors. Here the couple created an admirable permanent exhibition of dried plant specimens preserved by ingenious methods in their natural shape and colours and kept in fine cupboards of glass. There were anemones in all colours, sages, the inflorescence of which had, in Hareubeni's opinion, been the archetype of the seven-armed candleabra of the temple, and the "chatzav" announcing the approach of the rainy season,—when its straight, white inflorescences appear on the parched fields. The latter species for which Hareubeni had developed a special affection, was shown in its various aspects of the dry and the rainy seasons and with the specific diseases and insects parasitizing it. In addition to the museum Hareubeni hoped also to plant a "Garden of the Prophets" including all the species mentioned in the Bible.

His essentially religious and emotional approach to the problems of plant structure and life contrasted sharply with that of a younger generation of natural scientists educated in the rationalistic spirit of western civilization, though this spirit was by no means unfamiliar to Hareubeni who had studied botany and graduated from the University of Lausanne and others. This modern attitude is probably more scientific in the proper sense of the word, but lacks the emotional merits and attractiveness to wider, popular circles, simple friends of nature for whom Ephraim Hareubeni's death means an irreparable loss. It is also often deplorably dull, except with an intellectual elite which is both critical-exact and inspired by strong emotional stimuli.

Hareubeni's theories about plant names, etc., were not always convincing, but as a botanist, he possessed great merits. He was a keen observer noticing a thousand little things which escaped the attention of others. Falling in love with his plants, he studied them at all hours of the day. The illustrations of his and his wife's book, "Thesaurus plantarum" are remarkable for their artistic beauty. His inquisitive mind and pioneering energy led him on untrodden paths and, still as an old man, he would, as the prophet Amos, climb an old sycamore tree in a populated street of Tel Aviv, as if he were still a boy,—in order to make his observations on its upper branches.

Of his botanical achievements, we appreciate most his studies on the parasitic

and half-parasitic plant species of this country. The noxious Thesium attacking barley fields in the Negev and the red-fruited mistletoe bush developing on the branches of the olive aroused his greatest interest. While his late colleague, Alexander Eig, had not thought much of the damage inflicted upon unirrigated olive trees by the mistletoe, Hareubeni's observation showed convincingly that this green half-parasite threatens the life of the infested branches, absorbing the scarce water reserves available during the dry summer months. In another article (1935), Hareubeni insisted on the great damage due to various herbs, shrubs and trees by the twining parasite *Cuscuta monogyna*. Other contributions are devoted to the folklore of Palestinian plants which he collected from bedouin and fellahin, to the use of plants in popular medicine, as fodder for bees and for their aromatic properties.

It should not remain unmentioned that Hareubeni was botanical advisor to the Department of Agriculture and Forests during the days of the British mandate and keeper of its plant collections. His name will remain unforgotten as one of the first Jewish pioneers of plant science in this country.

VISITING BOTANISTS AT CLAREMONT

A number of botanists from various parts of the country are currently using the facilities of the Colleges at Claremont and of the Rancho Santa Ana Botanic Garden. These men are working at the Botanic Garden in various phases of research. Dr. David Dunn, formerly of New Mexico A. and M. College and a specialist on lupines (the genus *Lupinus*), is spending some months writing up the lupines of Nevada for a flora of that state to be published by the national government. Dr. Gerald B. Ownbey, of the University of Minnesota, is on sabbatical leave from his institution and holds a Guggenheim Fellowship for the year. He is growing many strains of prickly poppy (the genus *Argemone*) and is doing field and herbarium work on that genus during the current year. Dr. Lloyd Shinners, Southern Methodist University, recently spent some days in the herbarium; and Dr. Charles Quibell of Fresno State College is carrying on investigations relative to the flora of Fresno County, California.

CALENDAR

Pasadena Spring Flower and Garden Show opens April 3rd, extending through April 11th, in the Fannie E. Morrison Horticultural Center, Brookside Park, open daily 10 a.m. to 10 p.m. A mecca for flower lovers from all California's southland, where this major floral event is on record as the oldest of its kind in southern California and fifth largest in the nation. The theme, "A Floral Fair," will be evident in the patio which is to be "transformed into a colorful floral mart with strolling troubadours, brightly striped umbrellas, vari-hued tropical birds, goldfish, waterlilies—all helping to establish the atmosphere of Old Mexico." The five-acre natural hillside area is devoted to scores of individualized home gardens—giving scope to the imagination of all who are interested in enhancing the joys of outdoor living in this temperate climate. Traditional features are the cut-flower exhibit, flower arrangement displays and a complete demonstration of gardening aids, tools, fertilizers, furniture, etc. Of special appeal this year to artist visitors is an exhibit of landscape paintings by Orrin A. White.

From a release by Mary Nugent,
Los Angeles, Calif.

* * *

American Begonia Society—Pasadena Branch. 3rd Monday of the month at La Casita del Arroyo, 117 So. Arroyo Blvd. (under Colorado Bridge). 7:30 p.m.

* * *

Los Angeles Garden Club. 1st Wednesday of each month, at the Women's University Club house, 540 South Catalina, Los Angeles. 10:30 a.m. Meeting includes an outstanding speaker on a particular subject of horticulture, timely reminders, exhibits and awards of Blue Ribbon and a Special Award, to outstanding material on display. Adjournment at 12:30 p.m.

* * *

The Southern California Camellia Society, Inc. —April 8, 1954. Thursday. Auditorium of Jefferson School, 1500 Block, East Villa St., Pasadena. 2nd building west of Sierra Bonita Ave. Flower Exhibit 7:30 p.m. Call to meeting 8 p.m. Final meeting of the season.

ANNOUNCEMENT

Descanso Gardens in La Cañada, 160-acre flower wonderland of blooming camellias, azaleas and roses, was re-opened to the public in February, 1954, by the Los Angeles County Department of Parks and Recreation. It will be maintained on a 365-day year round basis for the benefit of the public and tourists, from 10:00 a.m. until 4 p.m. Admission will be 50 cents for adults, 25 cents for those who are 13 to 18 years of age, and no admission will be charged for children 12 and under accompanied by an adult. Groups of 20 or more may make arrangements for tours with lecture guidance provided, by telephoning SYlvan 0-5444.

BOOK REVIEWS AND COMMENTS

Beautifying India, by M. S. Randhawa. Rajkamal Publications Ltd., Delhi & Bombay, India. 224 pp. 23 color plates, illus. 1950.

Mr. Randhawa writes with the feeling that life cannot be fully lived without beautiful plants and trees. His statement, "While we are planning to banish poverty by harnessing the manpower and material resources of the Country with the aid of science and machines we should also have plans for banishing ugliness of the landscape by planned planting of beautiful flowering trees" is one which might be applied to our own part of the world as well.

Beautifying India is well illustrated with fascinating color plates of some of the outstanding flowering trees which grow well in India and were originally painted by Indian artists.

The 28 chapters are filled with a study of botany, an interest in trees and gardens, and the joy of art and aesthetics, all brought closer to every day life. Those interested in the lore, character and personality of trees will find the book of considerable interest. Those who feel that our towns, sub-divisions, streets and other surroundings are in need of beautification will find the book inspiring.

RUSSELL J. SEIBERT

* * *

A companion book to the above is *Flowering Trees and Shrubs in India* by D. V. Cowen. Thacker and Co., Ltd., Rampart Row, Fort, Bombay, India, first issued in 1950, and reprinted in 1952. A well illustrated volume in color throughout.

* * *

The Los Angeles State and County Arboretum has issued its first *Lasca Miscellanea,* published under the auspices of *California Arboretum Foundation, Inc.* The issue consists of a full index of John Hutchinson's comprehensive work, *A Botanist in Southern Africa* which hitherto has been unindexed (P. R. Gawthorne, Ltd., London. 1946). This index was compiled by George H. Spalding, Superintendent of the Arboretum. It is indispensable to efficient use of this fine book. Available through the *California Arboretum Foundation, Inc.* (Box 688, Arcadia, Calif.) at $2.00 per copy (spiral bound, plastic cover); or to members of The Foundation at $1.00. Special publication exchanges may be arranged, by request of other botanical and horticultural institutions.

* * *

History of the Rose—Roy E. Shepherd. The Macmillan Company, New York. 1954. 264 pp. 26 black and white illustrations; bibliography; general index, index of plant names. Received too late for current review. Will be reviewed in summer issue of *Lasca Leaves.* Publication date March 9, 1954.

The Perennial Adventure: A Tribute to Alice Eastwood, 1859-1953—Susanna Bryant Dakin. California Academy of Sciences, San Francisco. 1954. 40 pp. Additional notes by John Thomas Howell. To be reviewed later.

* * *

Plant Hunter in Manipur—F. Kingdon-Ward. Jonathan Cape, 30 Bedford Square, London. 1952. This is a book of 254 pp. and priced at 15 shillings or a little over $2.00. It is full of illustrations and maps. The author has unusual ability in descriptive writing and conveys much information about a country, its people, and its vegetation and at the same time does it so interestingly that one can hardly put his books aside when they are once begun. The beauty of the plants, the author's thrill at finding new ones or seeing old ones again, the marvels of the vegetation in Upper Assam, the difficulties for the plant hunter in this wild exceedingly remote country,—all are made vivid and interesting and constitute a travel book of charm and full of information. The reader's mouth fairly waters at the talk of pink lilies (*Lilium Mackliniae*), dwarf iris (*I. kumaonensis*), blue vanda (*V. coerulea*), a snow-white crab (*Pirus Pashia*), rhododendrons, primulas, and many others.

PHILIP A. MUNZ

* * *

Royal Horticultural Society Year Books. Three little books recently published by the Royal Horticultural Society, London, are:

(1) *The Daffodil and Tulip Year Book for 1954,* of 165 pp. It contains articles on the Raising of New Daffodils: The Genetics of Narcissus, I—Sterility; Hints on Preparing Daffodils for Exhibition; Daffodil Literature; the International Show at Heemstede, Holland; Daffodils in Australia, in Victoria, in New Zealand, in Rhodesia; etc.

(2) *The Lily Year Book for 1954,* priced at $1.65, has articles on Suggestions for Lily Gardens; Notes on Aurelianense Hybrid Lilies; Lilies of the Balkan Peninsula; Lilies in Western Nepal; Comparison of Lily Bulbs; Effects of Storage Temperatures on Forcing Responses of Easter Lily Bulbs; Lily Group Discussions; *Notholirion macrophyllum;* Cultivation of Nomocharis; etc.

(3) *The Fruit Year Book for 1954,* with 116 pp., takes up such subjects as Genetics and Breeding of Fruit Trees; New Varieties of Fruit in the United Kingdom; Orchard Renovation by Top-Grafting; The Plums of Thomas Rivers; Foliage Sprays for Correcting Nutrient Deficiencies; etc.

Each of these three books is richly illustrated, well bound, and priced to sell at $1.65.

PHILIP A. MUNZ

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Kigelia pinnata. The Sausage Tree. Showing parent tree on the campus of the University of Hawaii, photographed in 1938 by Ralph D. Cornell, Landscape Architect, Los Angeles. Close-ups of fruit and flowers from trees grown from seed of this parent tree, and sent from Honolulu by Mr. Cornell in 1947, to Edward H. Scanlon, Editor of *Trees* Magazine, who raised seedlings, three of which Mr. Cornell planted on the campus of the University of California, Los Angeles, nearly fifteen years ago. Two of the trees still stand where they were planted; a third was fatally infected with *Phytophthora.* Photographs, courtesy of Mr. Ralph D. Cornell.

NOTABLE TREES IN SOUTHERN CALIFORNIA

I. THE SAUSAGE TREE, (*Kigelia pinnata*)

MILDRED MATHIAS

ONE OF THE plant world's curiosities is the sausage tree, a member of the Bignonia Family. A tree on the road from Coconut Grove to Cutler, Florida, and another on the campus of the University of Hawaii have been widely publicised but not many people know of the two producing sausage trees on the campus of the University of California, Los Angeles. These two trees were planted about sixteen years ago from seed sent from Honolulu by Mr. Ralph Cornell. They first flowered in 1947 and three "sausages" were produced that year by hand pollination. Since 1948 the flowers have been pollinated every summer by botanists at the University and the trees bear a continuous crop of "sausages." As many as one hundred have been counted on one tree.

The common name of the tree is descriptive of the fruits or sausages which hang from the spreading branches. They are not produced here unless the flowers are hand-pollinated, due to the lack of the pollinating agent which functions in its native region. The fruits resulting from cross-pollination, pollen from flowers of one tree placed on the receptive stigmas of flowers of the other tree, are somewhat cylindrical and may reach a length of 18-24 inches and a weight of 10-12 pounds. Flowers pollinated with pollen from the same tree are frequently peanut-shaped and are only about half this size. Occasionally the tree produces sausages pollinated presumably by an insect or a humming-bird observed getting nectar from the flowers. These accidental pollinations produce soft misshapen sausages not more than six inches long and weighing about one-half pound each. Examination of the seeds indicates that fertile seeds are produced only in those fruits which result from cross-pollination. The fruit is extremely woody and fibrous and must be cut with a saw. The seeds are imbedded in the fiber. They germinate readily and the young trees grow rapidly. The sausage is not edible although the freshly cut fruits smell somewhat like cucumbers and the taste is that of a cucumber skin.

The trees are about 20-25 feet tall with broad spreading crowns. The leaves may be as much as two feet long and they are divided into three to five pairs of opposite leaflets and a terminal leaflet. The leaflets are stiff and a medium green color. They fall in early spring to be followed almost immediately by the new leaves. Flowers begin to appear in July and flowering continues into September. The individual flowers are somewhat bell-shaped, 4-5 inches in diameter, a mahogany or reddish-purple color, and are borne in groups on long dangling flower stalks. They open in the late afternoon and drop by mid-morning.

The sausage tree is a native of the tropical forests of West Africa. It is often planted in the interior of Africa where both flowers and fruits are regarded as a fetish. In Nigeria the fruit is sold in markets and used medicinally. It has been used as a dye and is supposed to serve as a charm to secure riches. It is reported that in Africa bats pollinate the night-blooming flowers. Another story is that squirrels living in the trees in Africa bite the ends of the fruits and let the juices ferment. They drink these juices and enjoy an intoxicated state for some time.

The most easily observed tree at the University is on the south side of the Education Building and may be seen from the main road through the Campus. The other producing tree is at the southeast corner of the Administration Building. Several small trees are planted at other places on the campus. Fruits may be seen hanging on the tree at any time of year since they do not attain a full size until 10-12 months after pollination and they may persist for a much longer time. It is not uncommon to see fruits resulting from at least two year's pollinations hanging on the trees.

EARLY DAYS IN THE LOS ANGELES PARK DEPARTMENT

FRANK SHEARER[1]

WHEN THE WRITER joined the Park Department in 1910, Los Angeles covered an area of 80 square miles, bounded on the north by Baxter Street, on the south by Slauson Avenue, on the east by Indiana Street, and on the West by Hoover Street. The city had four paved streets, Main, Spring, and Broadway from Temple Street to 9th Street, and Baudry Street from Temple Street to Sunset Boulevard.

The population was about 300,000; there were about 500 automobiles in the city and surrounding territory and the Auto Club of Southern California had just been established a short time previous to 1910. The city was governed by a Mayor and five Councilmen, elected at large; the Council met once a week. There were 3 telephones in the city: one in the City Hall, one at Eastlake Park, and one at Westlake Park. The Owens Valley Aqueduct had been started two years previously and was about one-third completed.

Los Angeles County Supervisors had issued $3,000,000.00 in road bonds to build 300 miles of County roads—these roads were 20 feet wide, composed of rock and oil, and the speed limit was 20 miles per hour. Due to a recent extensive annexation program, the city boundaries were expanded, taking in Hollywood, Griffith Park and territory lying between these points and the former city boundaries. San Pedro and Wilmington were tied in by way of a shoestring strip one mile wide, running north from Wilmington through part of Gardena and connecting with the extended south city boundary at Manchester Avenue.

In 1910 the city had about 4,000 acres in parks, but poorly distributed: Griffith Park, about 3,000 acres, donated by Col. Griffith; Elysian Park about 700 acres, part of the original Pueblo; Sycamore Grove, acquired by condemnation to get rid of a beer garden; Lincoln Park (formerly Eastlake Park), exchanged with So. Pac. R.R. Co. for other land; Hazard Park donated by former Mayor Hazard, two blocks from Lincoln Park; Prospect Park, oldest park in the city, history unknown to the writer; Hollenbeck Park, donated jointly by Mrs. Hollenbeck and ex-Mayor Workman; South Park, acquired by bond issue—$10,000.00 for 20 acres; Echo Park, greater area in lake, formerly the city's first domestic reservoir; Westlake Park, part of the original Pueblo lands; Lafayette Park (formerly Sunset Park), four blocks from Westlake, poorly located; Pershing Square (formerly Central Park), part of the original Pueblo lands; Plaza—where Los Angeles was founded; St. James Park, donated by subdividers; Terrace Park, donated by subdividers; several triangles and street parkways, such as Occidental Boulevard, the center Parkway of which was dedicated for Park use, and has to be maintained largely for the benefit of abutting property owners. In 1910, the Park system was only partly developed due largely to lack of money, equipment, and water. The organization was poor; surveys and plans were made in the City Engineer's office, usually delayed; there were ninety men employed in the Parks and the work was largely planting and maintenance. The Park Board met once a month.

Due to a political upheaval in 1909, the Mayor resigned; an election was held under the auspices of the Good Government League, and sweeping changes were made in all departments. Out of all this a new Park Board was appointed and the new Board announced in the local papers,

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[1]About Mr. Shearer himself:
Superintendent of Parks, 1910-1936; Park Commissioner, Oct. 1939-July, 1942; Deputy Superintendent of Parks, Oct., 1943-May, 1945; Ass't. Supt. of Parks, May, 1945-Sept., 1945 (at which time he was compelled to retire because of age).

at great length, its aims, aspirations, and program it intended to follow. The writer was so interested that an application to assist in the proposed work was made, and at an interview was hired as a Landscape Engineer.

The first assignment was for surveys for roads in Griffith Park, and for surveys of the Arroyo Seco with acquisition for a Park in view. A few months later, in selecting a Superintendent of Parks, which position was vacant, the Park Board and the Secretary read and considered over two hundred and fifty applications for the position; the Landscape Engineer's original application was also considered and he was selected to fill the post. The first order of business was setting up an organization for the Park Department. The Secretary and the Superintendent spent several months at night, arranging a filing, bookkeeping, and recording system, together with files for maps and plans.

At this time, the Parks were maintained in a rather haphazard manner: Griffith Park, for instance, with 3,000 acres, had a foreman, two laborers, and a mounted watchman; Elysian Park with 700 acres had eleven men, and three of them had the title of "Foreman." In order to remedy this situation, a meeting of all Park Foremen was called and they were asked individually how much Park area of the various types, with regard to improvement, one man could take care of. Then the jobbing gardeners, on private gardens, were interviewed; and as a result of these inquiries, a unit of work was established covering the various types of Park improvement.

Considerable resentment was expressed when it was found that Westlake had twenty-six men, while the units of work as agreed to by the Foreman, called for ten men; South Park had sixteen men, while the units of work called for six men; Lincoln Park with twenty-six men, though only sixteen men called for. This rearrangement gave the Department a working crew for new development. In order to assist the decreased maintenance crews, labor-saving equipment was provided, horse-drawn lawn mowers, grass edgers, and improved sprinkling devices, etc. That the new program might gain impetus, the City Council approved a resolution authorizing the Park Board to give money prizes and vacations to the men in the particular parks who showed the highest rating for efficiency and economy for a preceding three months; and a large bronze plaque, so stating, was placed at a prominent point in the Park so honored. The Park Board and the Superintendent made the three-monthly inspections.

Notwithstanding all the good intentions, as applied to the fore-going, the results were disappointing. At the end of a year, it was found, however, that Park maintenance had been reduced over forty per cent, and the Parks were in better shape than before the new regime was adopted. The Park Board applied to the City Council for authority to spend the forty-per cent saving on permanent betterments, Boat House, Comfort Stations, Tennis Courts, and other structures. The City Council who dominated the Park Board, and its appropriations, blandly said "NO!"—that if the Park Board could operate on a forty-per cent reduced budget, that was all that would be appropriated. Two years later, after a council election, labor was represented; the Council resolution covering money prizes and vacations was repealed, and the Park Board and the Superintendent were publicly accused of being slave drivers and of trying to make a reputation at the expense of the men. (Note: the foregoing is a mild statement of what was said.)

Pershing Square, formerly Central Park, was in a run-down condition,—lawn lacking fertilizer, dead trees, walks rambling without direction, pavillions and comfort stations in bad shape, people taking short cuts through flower beds from corner to corner diagonally. . . . It was decided to make it a "passing-through park," with a fountain, brick walks, ornamental coping around the outer boundary, with balustrade entrances, and also an underground comfort station. As this called for considerable concrete construction work, a Construction Division was set up, with a competent Construction Foreman in

charge. It was also decided to introduce a new method of irrigation—an underground sprinkling system; it was installed and was the first in Los Angeles. Formerly it had taken two men, at $2.50 per day each, with ten or twelve 50 ft. lengths of hose and twin sprays covering 20 ft. diameter, six days a week to water the Park,—that was $30.00 per week. With the new underground system, one man could water the Park in two hours at a cost of 62c—another labor-saving device. The installation of this system paid for itself in eighteen months; with various modifications, the system was later installed in all Park lawns, including the Golf Courses and the mountain slopes in Griffith and Elysian Parks. (Special note: as a result of the more recent change in the design of Pershing Square, the writer is compelled to express admiration for the lay-out:—while it does away with the passing-through feature, the spacious panel of lawn is beautiful and restful; the surrounding planting with walks and seats is very appropriate; Pershing Square now provides a beautiful breathing space, and is a wonderful ventilator for that part of the City.)

Space does not permit of detailed enumeration of all the projects undertaken by the Construction Division of the Park Department. The Conservatories in Lincoln Park were built when this park was the principle attraction in the days when people travelled by street car; later the people went farther afield, due to the increased number of automobiles, and interest in the Conservatories faded; they were later turned into a Recreation Center, and no doubt, as such render a service to a greater number of people. The first swimming pools were built by the Park Department, also several underground Comfort Stations.

In 1910, the City made a contract with the State for fifty years, with an option of fifty years more, for all of Exposition Park (formerly Agricultural Park), not occupied by structures belonging to the State and Los Angeles County, agreeing to spend not less than $10,000.00 a year on upkeep; and $10,000.00 paid on the lease. The Park Department designed and supervised construction of a new racetrack, and the Construction Division built the Grandstand, also the fountain and the balustrade surrounding the future rose-garden. The Park Department built the San Pedro City Hall, and also operated the Light-house at Point Firmin when it was under the U.S. Department of Commerce. The Park Department also built the Fire Boathouse at the Harbor, this being the first use of reinforced concrete piles in that type of construction; and it was handed a $2,500,000.00 order to build a series of Fire Stations:—it began to look like "the tail wagging the dog," so an application to the Council to be relieved of this work was granted. The Building and Construction Division of the Park Department then became a separate bureau under the Board of Public Works. (Note: This work for other departments had been carried on by the Park Department for ten years, doing about $150,000.00 worth of work annually.)

Following the surveys made in Griffith Park, road building was started, and about seventeen miles of mountain road, twenty-five feet wide, was built: this work was performed between 1910 and 1914, inclusive. This was the first attempt at mountain road building in Los Angeles City and County, and aroused considerable interest. Senator Flint adopted the plan for the subdivision of Flintridge, which is mountain territory; Los Angeles County adopted the method and specifications for the road through Topanga Canyon; and the Federal Forestry Department turned over the building of a road from Pasadena by way of the Arroyo Seco to Oakwild, to the Park Department. The latter donated the use of a steam-shovel for the project. These roads have a five-per cent grade on sharp curves, and seven- to ten-per cent on the straightaway. (Note: The roads in Griffith Park were widened from twenty-five to thirty-six feet, allowing for two lines of moving cars, and two lanes for parking; several additional miles were also built at this time. This work was performed by men on relief during the depression; 12,000

men were employed, and the work was supervised by the Park Department—6,000 men in the morning, 6,000 in the afternoon.)

A great number of men now living in Los Angeles will remember that period of work: the first Golf Course in Los Angeles was built by the Park Department, eighteen holes with sand and oil greens for putting, the fairways used as nature provided, no water being available. Today this small beginning has expanded into an extensive institution.

In 1910 when a Park Foreman needed any small piece of equipment, he had to go to the City Hall, make a requisition in triplicate, one to the purchasing agent, one to the City Auditor, and one to the Park Secretary. The Council met once a week, and the process was slow, taking not less than two weeks to complete the purchase. The Park Board made application to the Council for a revolving fund of $5,000.00, which was granted. Then tools and equipment were purchased in quantity at a lower price, and put in storage for future demand—a shed was fixed up at Elysian Park Service yard for storage, and a horse and express wagon were provided; the Park Foreman could be notified and orders filled on 24-hour notice. This proved a great saving in time and purchasing expense, and the City Council were so impressed that they established a store for all city departments; so the small $5,000.00 start made by the Park Department blossomed into an institution doing several million dollars worth of business annually.

In 1910, the men were paid once a month, but that was changed to bi-weekly; and another change was made: the Foremen had been obliged to leave their parks to go to the Park Office with the time-sheets, so to overcome this waste of time, a motorcycle was bought and a man detailed to visit the Parks for the purpose of bringing in the time-sheets. Likewise, when the payrolls and checks were completed, the man on the motorcycle again visited the Parks and delivered the checks to the men. In order to further facilitate communication with the Parks, telephones were installed—a saving in time, but unfortunately the people around the Parks monopolized the telephones, running up bills that the Park Department had to pay. A request of the local Telephone Company for estimates on installation of a telephone exchange in the Park Office, brought the response that an exchange could be installed for about $3,000.00. This would provide a check on who used the phones in the Parks. The City Council thought this was a wonderful idea, but instead of installing the exchange in the Park Department, thought it should be placed in the City Hall to serve all departments. That was the beginning of the telephone exchange now operating in the City Hall.

The foregoing items touch lightly on some of the projects and connected problems covering a period of four years—1910-1914, inclusive. A few special notes were added, showing what the various new projects led to. The writer would be lacking in respect to the memory of the men who made these things possible if he omitted to name them. The Park Board at that time had three members; they were: Judge Charles Silent, a retired Federal Judge; Mr. Henry O'Melveny, head of a firm of attorneys; Mr. J. B. Lippincott, Assistant Chief Engineer, in charge of construction of the Owens Valley Aqueduct, and formerly Chief of the U.S. Reclamation Service. These men received no compensation for their time devoted to Park Department work—weekly meetings, numerous trips to Parks, night meetings with citizen groups on Park acquisition, etc. They initiated numerous reforms on Park Administration; they were responsible for the first underground sprinkling system, the start of the City Store, the installation of a Telephone Exchange in the City Hall, and the organization of a Building and Construction Department,—together with many projects that lack of space will not permit mentioning—all this took place in four years, improvements, installations that the City never had before. These men are gone now, and it seems fitting to record their names and accomplishments.

WEATHER RECORD—1953

Los Angeles State and County Arboretum, Arcadia, California

MONTH	TEMPERATURES AVERAGE MIN.	AVERAGE MAX.	PEAKS MIN.	PEAKS MAX.	MEAN	RAINFALL INCHES MONTH	EVAPORATION INCHES MONTH
January.....	41.9	74.3	34.0	88.0	58.1	1.20	.975
February.....	36.4	73.9	28.0	88.0	55.1	.58	1.675
March.....	39.7	73.8	30.0	91.0	56.7	.96	2.150
April.....	44.5	72.7	31.0	86.0	58.6	1.18	2.820
May.....	45.4	80.0	39.0	96.0	62.7	.05	5.290
June.....	50.3	84.9	41.0	97.0	67.6	.03	4.675
July.....	58.6	97.0	50.0	107.0	77.8	——	6.785
August.....	54.5	92.6	49.0	100.0	73.6	——	6.110
September....	54.2	92.1	47.0	108.0	73.1	——	5.110
October.....	43.0	86.7	41.0	109.0	64.8	1.05	4.090
November....	45.8	78.6	34.0	93.0	62.2	1.38	2.020
December....	37.8	73.1	28.0	88.0	55.4	.40	2.050
					TOTAL INCHES—	6.83	43.750

GENERAL OBSERVATIONS:

The highest temperature of the year was recorded on October 5th when the thermometer reached 109°F. A temperature of 90°F. or over was recorded on ninety-seven days during the year. On twenty-four days the temperature went to 100°F. or more.

Lowest temperature of 28°F. was recorded on the nights of February 2nd and December 24th. A temperature of 40°F. or lower was noted on ninety-six nights during the year. On eight of these nights the temperature was below 32°F.

Frost was observed on forty-three mornings, but the winter months were mild as compared with recent years.

Smog was noticeably observed on one hundred-nine days, being more noticeable during the months of July, August, September and October.

1953 was a very dry year with an evaporation loss of 43.75 inches or 4.97 inches more than the previous year. During the five months and twenty-three day period from May 1st to October 23rd only .08 inches of rainfall was recorded. Rain was recorded on twenty-five days for a total of 6.83 inches as compared with fifty-nine days in 1952 when we received 34.23 inches. This 1953 total of 6.83 inches was well scattered with no heavy precipitation in any one storm or month. A storm total of more than one inch occurred on only two occasions during the year: October 23rd when 1.05 inches fell and on November 14th and 15th when 1.20 inches was recorded.

J. T. McGah

WEATHER RECORD—1953

University of California, Los Angeles
Subtropical Horticulture Area

1953	TEMPERATURE AVERAGE MIN.	AVERAGE MAX.	PEAKS MIN.	PEAKS MAX.	PRECIPITATION TOTAL MONTH
January.....	47.2	69.8	38	84	1.52
February....	40.7	66.8	31	84	0.00
March.....	44.7	66.4	38	87	0.50
April.....	47.0	67.7	36	89	2.09
May.....	49.2	68.6	44	80	0.01
June.....	53.7	74.9	47	82	0.06
July.....	59.4	80.3	54	91	0.00
August.....	57.0	76.7	52	84	0.00
September...	54.7	79.5	49	102	0.00
October.....	50.4	75.1	41	88	0.00
November...	46.6	71.8	39	92	1.38
December...	41.9	69.1	34	84	0.06
				Total inches	5.62

AIR LAYERING EXPERIMENTS AT WISLEY*

F. E. W. HANGER, V. M. H., AND A. RAVENSCROFT

MOST TREES and shrubs are comparatively easy to reproduce vegetatively from cuttings, yet there are notoriously obdurate plants such as Acers, Abeliophyllum, Magnolia, Mahonia, Prunus, Parrotia, etc., which are so difficult to root as to make the whole operation not only unprofitable but most impractical.

During the last two years, 1952 and 1953, experiments have been carried out in the Gardens at Wisley to test air layering as a means of overcoming this difficulty. The mysterious plastic film containers which have been hanging on trees and shrubs in various parts of the Gardens have been a source of great interest to Fellows. Queries have been so numerous that it has been decided to publish this article giving brief details of the information so far obtained from our experiments.

For the amateur who is interested in the propagation of plants and where the time factor is not of paramount importance, air layering has its appeal and can be made the means of producing many a duplicate of some rare and beautiful plant which may eventually be presented to some friend or made to adorn another part of the garden. During these days of high labor costs the time involved will make general air layering a noncommercial proposition, but it can play an important part in nurseries in the increase of trees and shrubs which are hard to propagate vegetatively and do not lend themselves easily to normal layering as a means of multiplication.

Air layering originated from the ancient Chinese practice of binding manure and moss to a twig to induce root formation in plants which were difficult to root from cuttings. The method of air layering has been in constant use through the years chiefly as a means of propagation of stove and greenhouse plants. It consisted of damaging or cutting a stem of a plant and wrapping moist moss and soil around the injured part, the compost sometimes being held in position with string or a flower pot cut in two, and placed around the material. Constant attention was necessary to keep the moss or soil continually moist, when rooting usually occurred. This watering of necessity had to be undertaken several times a day even when in a warm closed greenhouse. Such frequent attention would not be possible with out-of-doors air layering and it is here that the new plastic films have been the means of providing air-tight conditions and thus retaining the moisture within until the layer is sufficiently rooted.

POLYETHYLENE FILM

After the recent world war extensive experiments with the new plastic films to replace the adhesive bandage in air layering practices were carried out in various parts of the United States of America, especially at the Arnold Arboretum where excellent results were claimed with the new plastic film "Polyethylene." This material is widely used for packing foodstuffs and cannot be bettered for the transportation of cuttings and small plants which need air-tight conditions. "Polyethylene" appears to be remarkably strong, very flexible and easily handled and when it is exposed to tropical conditions such as those in a stove house with its high temperatures and constant humidity no case of mould growth or attack has been recorded. "Polyethylene" is identical to the plastic film sold in this country under the names "Alkathene" (renamed "Visqueen") or "Polythene."

There are a confusing number of plastic films now on the market. As all do not have the same properties for successful air

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layering it is important to obtain the right material.

"Polyethylene" can be purchased in many thicknesses but those ranging from four thousandths of an inch to six thousandths of an inch inclusive are considered ideal for air layering. No significant difference in the suitability of these various thicknesses is evident. Film less than four thousandths of an inch is considered too thin as the material is apt to stretch when being wrapped around the moss; such thin plastic film also tends to admit water when subjected to constant overhead irrigation. Thicknesses of seven thousandths of an inch and more proved to be too heavy and less flexible making the perfect air-tight "end seal" difficult to accomplish. This plastic film has exceptional qualities for retaining water vapor and it has been observed that air layers with perfect "end seals" are kept moist for periods of up to one year in length. As "Polyethylene" film is fairly transparent the developing roots of the twig are clearly visible under the wrapping, and thus by careful observations the experimenter can ascertain when sufficient roots have been formed and when to sever the air layer from the parent plant.

"Polyethylene" film cut in pieces 9 inches by 7 inches is a good average size to hold sufficient rooting material for air layering trees and shrubs. Tubular plastic material is obtainable and this overcomes one of the difficulties of the process of air layering which is to exclude air at the overlap of the bandage enclosing the material round the stem thus leaving only the two ends to be secured by electrical insulation tape. Tubes 3 to 4 inches wide and 8 to 9 inches long make a good average size, but have the disadvantages of taking much longer to operate, and being more expensive to purchase. Flat sheet "Polyethylene" plastic film can easily be converted into tubular pieces and an efficient seal may be obtained by using a gas flame. The best method is to place the flat sheet between two metal plates, allowing the edges to be sealed to protrude by approximately ½ inch. Direct the flame on the exposed edges until the Polyethylene "runs back" to the metal plates and cools off. This method will be found to be simple and quick in operation.

AIR LAYERING

It has been proved that air layering is best accomplished during the month of April on matured one-year-old wood. Little success has been obtained late in the season with the current year's growths. This is no doubt due to the fact that in the spring the plant is in active growth, whereas in the autumn the rooting of difficult subjects by air layering has not been assisted by the fact that plants (especially deciduous varieties) are beginning to enter their period of winter rest. The soft mid-summer growths of trees and shrubs are difficult to manage. A large majority of the young growths flag and suffer considerably, many of them withering and almost dying at once when a cut is made in the stem 1½ to 2 inches long.

When dealing with the matured wood during the month of April the making of the air layer itself is very simple and effective. Select young twigs of reasonable thickness (about the size of a lead pencil) remembering that these must of necessity vary according to the type of tree or shrub chosen to be air layered. A longitudinal cut, 1½ to 2 inches long, is made in an upward direction in the chosen stem of the plant. The entrance of the cut should commence almost immediately beneath and to the side of a leaf axil, leaving the axil on the tongue of the cut and a reasonable distince from the apex of the shoot—approximately 6 to 12 inches; this to be governed by the thickness of the stem. When this work is carried out as advised during April, the propagator will be working on the previous year's growth, with the sap of the plant already rising and thus making the operation more or less simple. Experiments with the circular bark method, which necessitates the removal of a complete circle of bark around the stem, proved to be far less successful than the upward longitudinal cut. With the circular bark method casualties through breakages, caused by the wind, etc., were numerous.

After the necessary cut has been made a

growth-promoting substance, preferably in powder form, is applied to both cut surfaces, and around the stem in the immediate vicinity of the cut. The next important step is to open the jaws of the cut by placing a small twist of clean Sphagnum moss between the cut surfaces. A large handful of good quality Sphagnum moss, free from all foreign matter is then well soaked in rain water, and wrapped around the stem. This is then held in position with the plastic film which must be wound around the covering moss in such a way as to arrange for the overlap of the film wrapping to be on the underside of the air layer, thus preventing rain water from seeping into the package. It only now remains to "air seal" the two ends with adhesive tape. Before applying this the plastic film must be twisted tight at each end. If the two ends are folded rather than twisted in the direction of the overlap this will prove a quick and easy procedure. When applying the tape care must be taken to continue the winding beyond the edge of the film to finish on the wood of the stem; this prevents water running down the stem of the plant into the moss. Should this be allowed to occur numerous failures among the air layers will occur due to the soggy conditions inside the plastic wrap creating unfavorable rooting conditions.

If the air layer is correctly created it will remain moist and healthy, over a period of months, giving ample time for rooting to take place.

One-third granulated peat or acid vermiculite can be incorporated with the Sphagnum moss inside the plastic film with advantage. Vermiculite adheres to the damp moss more readily than granulated peat and for this reason is preferable.

Should air layers be made on rather slender wood, it will be found necessary to secure them to an adjacent branch to prevent swaying and damage from wind.

ESTABLISHING THE ROOTED LAYER

After 8 to 12 weeks, roots may be expected to protrude through the moss, and their progress can be watched through the transparent plastic film. The thick fleshlike roots of Magnolias and other plants will be easily noticeable but the fibrous roots of Prunus, Roses, etc., are much more difficult to see. These will need close scrutiny to ascertain when the layer has formed sufficient roots to enable it to re-establish itself with safety after being cut from the parent plant.

As soon as it is considered that sufficient roots are formed to sustain the layer's independence it should be removed by cutting through the stem below the lower insulation tape-seal.

It has been stated elsewhere that air layers are difficult to re-establish independently in new compost. This has not been evident at Wisley, possibly due to the fact that every assistance is given to the layer (which is usually a large plant with a small root system) to encourage it quickly to become well rooted in suitable compost.

After the air layer has been cut free the insulation tape must be removed from each end and the plastic film carefully unrolled. It should then be easy to separate (the majority) of the moss from the roots, and it will now be necessary to remove with a pair of secateurs the stem snag below the rooted portion. The layer is now ready to be potted into 4-inch pots with plenty of drainage and one of the following composts:

1. Equal parts of John Innes Potting No. 1 and Peat Moss.
2. Equal parts of J. I. P. No. 1 and Vermiculite.
3. Equal parts Vermiculite and Peat Moss.

The vermiculite should possess an acid reaction.

As soon as potted the young plants should be placed in a cold frame and receive frequent syringing on all suitable occasions. Special care not to over-water in these early stages is essential.

For the first week the cold frame containing the young layers must be heavily shaded and closed. Later the shading can be decreased gradually and the air to the frame increased. When the roots of the new plants are well established around the

Air Layering. Showing essential technique of this procedure as followed at Huntington Botanical Gardens; subject photographed is *Rhododendron* "Pink Pearl." (Note: orginal photographs accompanying this article in the *Journal of the Royal Horticultural Society* unfortunately could not be included with the reprinted text.) Photograph courtesy of The Huntington Library and Art Gallery, San Marino, California.

sides of the pots, potting on, or planting out-of-doors in the open nursery, is advised before a check to growth is possible.

PLANT GROWTH SUBSTANCES AS AN AID TO AIR LAYERING

The experiments carried out during the past two years have been made more comprehensive and interesting by the help given by the makers of certain plant growth-substances. Not only have they given their commercially available growth-promoting substances in both liquid and powder form (Seradix A and Seradix B), but when requested, special preparations of indolyl butyric acid, 2:4:5-Trichlorophenoxyacetic acid and (2:4:5-Trichlorophenoxy) propionic acid.

It was soon made evident that the powder form lent itself more favorably to the application of air layering. During the first season's experiments therefore, powders containing indolyl butyric acid with strengths ranging from 1,000 p.p.m. to 8,000 p.p.m. were used.

The most concentrated of these is normally recommended for hard-wooded cuttings, and in the Wisley experiments with air layering, proved the most successful.

In most cases especially with Abeliophyllum, Mahonia, Magnolia, Parrotia and Prunus a 100 per cent. rooting took place within 10 to 12 weeks. Notable exceptions were Acers, H. T. Roses and large leafed Rhododendron species, all of which formed a large amount of callus, and after months of watching no roots were forthcoming.

The intermediate strength gave very satisfactory results on many plants, but not so high a percentage as the stronger powder. Again the weakest concentration was quite successful with less difficult rooting subjects, but with the most difficult varieties the percentage of successes was much less than with the intermediate strength.

At the end of the first season's experiments the results proved that the powder

containing 8,000 p.p.m. I.B.A. gave by far the best results; yet this strength did not succeed in producing roots (only callus) on a number of plants. The success obtained by these initial efforts encouraged us to continue the experiment for another season, using much stronger growth substances than the I.B.A.

The makers also arranged to help by making up nine preparations containing the following concentrations:

1. Indolyl-butyric acid @ 15,000 p.p.m.
2. Indolyl-butyric acid @ 20,000 p.p.m.
3. Indolyl-butyric acid @ 30,000 p.p.m.
4. (2:4:5-T) 2:4:5-Trichlorophenoxy acid @ 100 p.p.m.
5. (2:4:5-T) 2:4:5-Trichlorophenoxy acid @ 1,000 p.p.m.
6. (2:4:5-T) 2:4:5-Trichlorophenoxy acid @ 10,000 p.p.m.
7. (2:4:5-TP) a (2:4:5-Trichlorophenoxy) propionic acid (a 100 p.p.m.
8. (2:4:5-TP) a (2:4:5-Trichlorophenoxy) propionic acid (a 1,000 p.p.m.
9. (2:4:5-TP) a (2:4:5-Trichlorophenoxy) propionic acid (a 10,000 p.p.m.

By using this wide range of growth substances it was hoped to find a suitable strength to encourage the rooting of the more difficult plants which failed to root with the commercially available regulators. It was fully realized that the highest concentrations might be injurious to plant life but at any rate it was hoped to obtain the upper limits of the plants' endurance to growth substances. With the stronger strength Magnolias particularly produced an abundance of very thick thong-like structures. Sections of these showed them to be typical roots with very wide thin-walled cortex and a central cylinder showing 11 to 12 strands of primary xylem alternating with small groups of phloem. There was no sign of root hair development and this may explain the reason why it has often been reported that cuttings rooted with the aid of growth-promoting substances fail to grow away satisfactorily. This may be due to the lack of root hairs on roots produced with the aid of too powerful growth regulators.

H. T. Roses which failed to root with I. B. A. 8,000 p.p.m. were rooted 83 per cent with the stronger I. B. A. at 15,000 and 20,000 p.p.m.

The various species and varieties of Acer require different strengths of growth-regulating substances, *A. palmatum* and *A. palmatum atropurpureum* need I. B. A. as strong as 30,000 p.p.m. with the help of which they root readily. I. B. A. at 20,000 p.p.m. will assist the majority of Acers to root quite successfully when air layered.

The stronger concentrations of (2:4:5-T) at 10,000 p.p.m. and those of (2:4:5-TP) at the same strength did much damage.

In the majority of cases the air layers (especially the Magnolias) completely died, and with many other genera they became dwarfed and distorted. Some layers produced roots although the growth above the roots was killed. Many of the roots were thick and fleshy and when inspected appeared to have no root hairs attached.

CONCLUSION

To date it has not been possible to investigate fully the reactions of the Rhododendron genus to growth-promoting substances when air layered, but enough has been accomplished to prove that if applied carefully and according to recommendations indolylbutyric acid still holds its own amongst accelerators of root growth when plants are air layered. However, much research work is still necessary before we can solve many of the limiting factors which must be taken into consideration before the full benefit is obtained from root inducing substances.

PLANT PATENTS EXPLAINED

LOUIS CUTTER WHEELER

IN READING nursery catalogs you frequently encounter plants designated as patented. Usually these patented varieties are more expensive than unpatented varieties. You may have wondered what the patent means to you.

The general assumption is that a patented plant is superior to an unpatented one; if this were not so the patented plants could not be sold for the higher price. In actuality the mere fact that a plant has been patented is no guarantee that it is better; it is supposed that the variety is at least new. Of course, after a few years, a patented variety which failed to prove itself superior would probably fall in price to the level of unpatented competitors unless the prevailing public faith in things patented offset the twin disadvantages for higher price and lack of superiority. With so large and unorganized a market it is quite possible that a patented plant of no unusual merit might actually enjoy a profitable sale at a premium price for the life of the patent—seventeen years.

In order to understand the significance of a plant patent it is necessary to consider the provisions of the law which provide for patenting of plants. This was passed May 23, 1930, and subsequently amended slightly. Its essential provisions are: Whoever invents or discovers any distinct and new variety of plant, other than a tuber-propagated plant, may obtain a patent therefor which shall grant to the patentee, for a period of seventeen years, the exclusive right to exclude others (throughout the United States and the Territories thereof) from asexually reproducing, or using or selling the plant so reproduced.

The interpretation of this statute as it applies to plants lies in the no man's land between law and biology, and some of the legal interpretations are biologically befuddled. Certain aspects of the law are, however, unequivocal.

Plants customarily propagated by seeds are excluded. This is biologically sound since asexually propagated plants, i.e., those propagated by budding, grafting, slipping, layering ,dividing, or by bulblets or cormlets growing from bulbs or corms, show a minimum of variation and a population of essential uniformity can be maintained. Sexually-(including seed-) propagated plants may vary rather freely; the characteristics of the variety may change through the years as the producer selects, or otherwise modifies it, and spontaneous production of mixtures with other varieties may occur from wind-blown or insect-carried pollen. Hence administration of patents on seed-propagation plants would be impractical.

Another group of excluded plants is the tuber-propagated plants. Apparently Congress objected to patenting varieties of the white potato. The interpretation of tuber is in the correct botanical sense of a short, thickened, underground stem of limited growth and usually horizontally oriented axis.While ordinarily fairly clearly distinguished from other specialized underground stems, tubers do approach and perhaps intergrade with corms in some kinds of sedges, and with the rhizomes of some kinds of iris. Nevertheless, the distinctions are usually pretty clear and no disputes have arisen on this point. Plants propagated by large fleshy roots can be patented even though, as in the case of the sweet potato, they may be food plants.

The U. S. Supreme Court has ruled, on the basis of a rather dubious legal fiction conceived for the purpose, that bacteria are not patentable.

The meaning of "new variety" for purposes of the act is a key point. "Variety" is used in the broadest possible sense, and "kind" would be a better word since everything from the most minor variations, to new species are included. To be "new" the "variety" must not have been

either known or used by others in this country or patented or described in any publication in any country prior to the invention or discovery by the would-be patentee, and not in public use or on sale after the discovery or invention for more than a year prior to the application for the patent.

The act specifically excludes patenting of a new "variety" found growing spontaneously in nature. This prevents the plant explorer from protecting his investment. The logic of this distinction, though obscure, is not the primary consideration here in this simplified exposition of the botanico-legal aspects of the law. It will suffice to say that apparently wild plants are conceived to fall under the general classification of a "phenomenon or law of nature," and as such are basically unpatentable, else someone might patent any newly discovered natural law or phenomenon. However, in the attempt to distinguish between the origin of the new variety in nature and the origin under cultivation, some strange legal opinions, devoid of biological basis, have been rendered.

The plants which may qualify as "new" apparently may all be assigned to one of the three following categories: sport (bud or somatic mutation), hybrid, or mutation (non-somatic). The legalist's belief that these are in some way induced by the person who cultivates or cares for the plants can be justified only partly since most of the sports and mutations, and some of the hybrids, arise spontaneously. Whether chimeras are patentable is unknown. Neither has any decision been discovered by the writer relative to patentability of variegated plants most of which are now known to be due to infection with a virus. For example, our two-tone flowering peaches common locally have both rose colored and pale pink flowers, petals or parts of petals due to infection with peach mosaic virus. Patentability of such pathological color forms is unknown.

The ultimate decision as to "newness" rests with the Agricultural Research Service, United States Department of Agriculture. They may, at their option, require submission of specimens, or opportunity to examine the growing plant. Opinions of competent witnesses may be taken into consideration.

If you find a new kind of plant in your garden and you wish to patent it, the first thing to do is to propagate it asexually and grow it until the progeny show the characters in which it is new and different. This asexual reproduction and demonstration that the novel characters persist in the progeny is "reduction to practice" and constitutes "conception of invention" in the legal sense. Until the plant has been successfully asexually reproduced no invention exists, and no valid application can be made though apparently many applications in the past have been made without these prerequisites, and patents have been granted. The validity of the patent may never be questioned, but should you sue someone for infringement, the first refuge of the defendant is likely to be challenged of the validity of the patent on the grounds that you failed to asexually reproduce the plant successfully including growing the progeny until they showed the novel characters prior to application for the patent. Then you will have to prove that you did, or forfeit the patent. Consequently, competent, preferably disinterested, witnesses should certify as to the date of successful completion of asexual reproduction including appearance of the novel characters in the offspring.

The scope of the patent permits the patentee to control sale, use and asexual propagation of the patented plant. He may license others to propagate and sell on a royalty basis. It is generally held that control of sale and use does not extend to control of sale and use of flowers or fruit or other plant parts not intended for use in asexual reproduction.

A moot question is the coverage of plant patents. Does the patent cover only members of the clone asexually propagated from the original plant, or does it apply to all plants indistinguishable from each other? In the only pertinent decision discovered, the court ruled, *in effect,* without realizing the biological signifi-

cance of its ruling, that only members of a clone are covered, and that indistinguishable plants which originated as another sport, mutation or hybrid, even though identical, were not covered. Proof of infringement was difficult enough before this decision. Now, if this decision is to serve as a precedent, proof of infringement is well-nigh impossible *unless* the alleged infringer is using the fancy horticultural name under which the patentee is selling the plant.

It is not permissible in applying for a plant patent to use a fancy horticultural name. When application is made, the plant is referred to merely as a rose, peach, camellia, etc., as the case may be. However, in modern nursery trade, a plant is of little commercial value except for the demand created for that plant under a distinctive fancy horticultural name. Consequently there would be little profit in propagating a patented plant unless it were sold under the name under which a market had been created by advertising, except for plants used mainly for commercial production of plant products such as fruit, cut flowers, pulp wood, etc. In the latter case substantial savings might be made by propagating stock without license to establish one's own orchard or grove.

From this summary it should be evident that plant patents involve many puzzling and often obscure problems in the botanico-legal field. As yet there have been few judicial decisions to interpret the relevant statutes. However, the home gardener may be happy in the belief that the patented plant which he buys is perhaps new and better even though probably more expensive. Just today, I bought a couple of patented roses myself.

Department of Botany
University of Southern California
Los Angeles 7, California

COVER PICTURE

Historical Landmark No. 367

THE DAY dawned benign and beautiful, and closed in an atmosphere of success and carefree celebrations. May 18, 1954, was a day of dedication at the Los Angeles State and County Arboretum. It is recorded for all time on a bronze plaque given by the State of California, and placed in front of "Lucky" Baldwin's "Queen Anne Cottage" on the historic homesite of Rancho Santa Anita.

Members of the Historical Committee worked early and late arraying "Queen Anne" for her moment of glory: Mrs. John R. Mage and Mrs. Richard Y. Dakin, co-chairmen, Mrs. Ernest A. Bryant, Jr., Maurice Block, Mrs. Howard Cunningham, Mrs. Forrest Q. Stanton, Mrs. Alfred Murray, Jack Fawcett, Dewey E. Nelson, to mention only the portion of the Committee most active in the day's preparations. During the brief speeches, credit was given where credit was due. Mrs. James Greer, Regent of the Santa Anita Chapter, Daughters of the American Revolution, was introduced, and she presented a second monetary gift from this organization, anticipating the restoration of the Hugo Reid *adobe* built in 1839, now in a state of dis-repair. Supervisor John Anson Ford, Chairman of the Los Angeles County Board of Supervisors, introduced Aubrey Neasham, who came down from Sacramento for the express purpose of formally dedicating the Cottage on behalf of the State Park Commission.

There followed an informal inspection of the three historic buildings bordering the Lake—then, "regalement" on the lawn, and singing of old favorites harmonized by four pretty "Crown City Coronettes," to gratifying applause. And so, "Queen Anne Cottage" intended by "Lucky" Baldwin for entertaining when he built it in 1881, resumed its true role, becoming, furthermore, Historical Landmark No. 367 in the State of California, on a sunny afternoon in 1954. S. B. D.

CISTUS AND ITS RESPONSE TO FIRE

LOUIS B. MARTIN AND MRS. MARCELLA JUHREN

IN TIME to come, species of *Cistus* or "Rock Rose" may be added to the chaparral flora of the Angelus National Forest. Recent experiments at the Arboretum indicated that certain species of this genus do not burn readily.

For some time, it has been the thought of those whose job it is to reduce the hazards of fire, that cabin sites, roads, stands of timber, etc., might be protected by encirclement of plants which burn less readily than native chaparral. It has been observed that massed plantings of certain species in the path of a fire, have checked or markedly slowed its progress. Such a planting might add to the effectiveness of fire breaks. Unfortunately, there are few species which are of known value in this respect.

The series of fires in the Angeles National Forest during 1953 rekindled public interest in the problem of re-seeding burned over areas. To this program and in cooperation with Mr. Gustaf Juhren, USFS, the Arboretum volunteered aid in the search for plants suited to the existing growing conditions of the mountain slopes and which might reduce the fire hazard.

At the suggestion of Dr. Seibert, Mr. T. McGah burned leafy branches cut from various species of plants known for their drought tolerance and ease of propagation by seed. The *Cistus* selections seemed most promising. A larger field trial was arranged, to be followed by other studies.

MATERIALS AND METHODS

Experiment 1: Field Burning of Cistus. Two to three year old *Cistus* species were used for this experiment. These plants were growing in the West Acres Section of the Arboretum (Fig. 1). Straw to a depth of 1 foot was placed around and under each bush to be burned. One bush of each species burned was left as a control. Burning took place on Jan. 4, 1954 (Fig. 2). There was a light S.W. breeze or updraft, estimated at about 6 mph. The fire residue was left under each bush. Table 1 lists the *Cistus* species used under controlled burning plus other data observed subsequent to the burning.

Experiment 2: Field Vegetative Propagation. To observe the growth of *Cistus* in an area where rainfall is the only source of moisture, the following species were flatted and grown in the greenhouse: *C. albidus, C. canescens, C. crispus, C. hirsutus, C. laurifolius, C. monspeliensis,* and *C. purpureus.* The seedlings were moved to the USFS Flood Control nursery after six weeks, and there replanted in separate containers for further growth. Subsequently, under the supervision of Mr. Juhren, these plants were moved to their permanent site on the west-facing slope of Lannon Canyon earth dam, Arcadia, California.

Experiment 3: Fire Break Seeding. To observe the germination and growth of *Cistus* seeds at a permanent site, the following species were seeded along the edge of a fire break on the Lux Arboretum Annex at Clamshell Canyon, Monrovia, Calif.: *C. albidus, C. canescens, C. crispus, C. hirsutus, C. ladaniferus, C. ladaniferus.* var. *maculatus, C. laurifolius, C. monspeliensis, C. purpureus,* and *C. salvifolius.* This seeding was made in Jan., 1954. Again, the only water supplied was that from rainfall.

RESULTS

Field Burning of Cistus—The extent of burning on all bushes ranged from 10 to 100%, (Table 1). The bushes did not seem to burst into flame, but rather caught fire near the base of the bush, fire progressing slowly upward. In the taller bushes, only the base of the plant was severely damaged; the top leaves being untouched or only slightly scorched. The fire in the individual bush appeared to subside soon after the main body of the

straw had burned. The estimate per cent of burn shows that no two bushes of the same species were effected equally by the fire.

The emergence of seedlings under the burned bushes was extremely interesting (Figs. 3 and 4). A complete count of seedlings was made for many of the species. The asterisk, Table 1, indicates those species. The number of seedlings of other species was obtained by estimation following the count of a ¼ section of the area under the bush. The number within the parentheses indicates the number of plants of each species. It was clear that burning in some way increased seed germination. In only one case, *C. ladaniferus,* were there more seedlings under the unburned bush than under the one that was burned.

About the time of seedling emergence, some of the burned bushes were observed to be sprouting close to the ground. Those species in which this observation was made are indicated by a (+) in the last column of Table 1.

Field Vegetative Propagation—Germination of these *Cistus* species at the Arboretum while in the flats was very good. The moving of the seedlings to the USFS nursery and then to the dam site was successful. At the present time, the plants are growing well; however, it is too early to make conclusions as to their value in the field.

Fire Break Seeding—The amount of germination has not been up to expectations. *C. ladaniferus, C. purpureus,* and *C. albidus* with 21, 50, and 50 seedlings respectively represent the best germination of the ten species. The size of the seedlings, four months after sowing the seed, indicate that emergence occurred rather recently. It will be necessary to observe these plants for another year before their ability to establish themselves under such conditions can be determined.

Another type of experiment is in progress. The increased germination of *Cistus* seed under bushes which were burned might be caused by several factors such as, (1) the effect of heat on the seed itself, (2) the removal of litter allowing more light to reach the seed, (3) the destruction of an inhibitor. This inhibitor, if present, may have been in the litter and removed by burning, or it may be in the seed. In the latter case, the charcoal produced may serve to absorb the inhibitor. Accordingly, seed lots were planted under the following conditions:

1. In pots with cover of mature *Cistus* leaves.
2. In pots with cover of burned *Cistus* leaves.
3. In pots with cover of straw.
4. In pots with cover of Charcoal.
5. In covered glass dishes with and without charcoal.
6. In covered glass dishes in light and in darkness.

Since all these conditions may also be affected by temperature, repetitions will be made throughout the year, and the results published at a later date.

TABLE 1. The *Cistus* species used and other data subsequent to their burning under the conditions described for Experiment 1.

SPECIES	AVERAGE HEIGHT IN FEET	% BUSH BURNED	NO. SEEDLINGS BENEATH BUSHES		SPECIES STUMP SPROUTING
			UNBURNED	BURNED	
C. albidus	2	50-75	185 (1)*	2531 (2)*	—
C. canescens	2	50	0 (1)	1263 (1)	—
C. crispus	2	25-95	6 (1)	3255 (5)	+
C. hirsutus	3	25-50	83 (1)*	1439 (2)*	+
C. hirsutus, var. *acutifolius*	2	50-100	2 (1)*	145 (2)*	+
C. ladaniferus	4	75-100	1045 (1)*	950 (2)*	—
C. ladaniferus, var. *albiflorus*	2	10-100	0 (1)*	0 (2)*	+
C. laurifolius	2	25	31 (1)*	183 (2)*	+
C. monspeliensis	2	100	165 (1)*	294 (1)*	—
C. purpureus	2	20-80	50 (1)*	720 (2)*	+

Fig. 1. *Cistus* planting in West Acres before burning. Fig. 2. Burning of selected *Cistus* species. Fig. 3. Un-burned (control) *Cistus crispus*, no seedlings in heavy leaf mulch. Fig. 4. Burned *C. crispus*, note seedlings clustered around base of bush.

Discussion

The *Cistus* study is still in the experimental stage; however, two facts should be emphasized as a result of the present investigation. First, mature *Cistus* plants did not catch fire readily nor did they sustain fire once the main blaze of the litter subsided. Second, *Cistus* seeds germinated exceptionally well following the fire. These two characteristics along with drought tolerance are paramount for plants to be used in reforestation of our areas subject to fire.

The stump sprouting after burning and the establishment by seed and transplants further adds to the desirability of using *Cistus* to increase the permanence of the flora on our southern mountain slopes. *Cistus*, a native of Asia Minor, S.W. Europe, and N. Africa, grows within a range of conditions which would seem to insure its success here.

Editor's Note: The Arboretum expresses its appreciation to Mr. Gustaf Juhren, Chief Silviculturist, USFS for his cooperation and interest in this program; and to Mrs. Marcella Juhren for her volunteered services in carrying out the tedious job of counting the *Cistus* seedlings and for her assistance with phases of the other experiments reported here. Special mention should be made of the assistance given by the Arcadia Fire Department in standing by with its equipment, as a precautionary measure during the experimental burning of the *Cistus* plants.

Daylily display border along road at the foot of Tallac Knoll, Los Angeles State and County Arboretum, Arcadia, California. Courtesy of same.

PROGRESS OF THE DAYLILY TEST GARDEN AT THE LOS ANGELES STATE AND COUNTY ARBORETUM

W. QUINN BUCK

IN THE FALL of 1950 a large number of *Hemerocallis* species, hybrid varieties, and seedlings were moved to the Arboretum from the University of California at Los Angeles. These represented plants obtained from many sources, together with seedlings selected from larger populations. These were intended to be the basic material for a daylily test garden and for further breeding and research.

During the last three winters a considerable part of these plants, together with new accessions, has been set out in the permanent test garden area just west of the Coach Barn on the Arboretum grounds. At the present time there are some 270 clones in the ground, planted in triangular groups of three clumps of each clone, with a large number yet to be moved or to be obtained from daylily growers. When single plants are obtained, it is our practice to propagate them before putting them in the test garden.

The species collection is now fairly complete, inclusive of all except the rarest. Two clones of *Hemerocallis flava,* the Lemon Daylily, which are believed true, are being grown and should prove of special interest since this species is commonly confused in our California gardens. It seems to be adapting itself somewhat satisfactorily to our mild winters

and is now carrying seed pods. *H. minor* is a bit more resentful of our winter temperatures, but it does flower moderately well. *H. middendorffi, H. dumortieri, H. thunbergi, H. citrina, H. aurantiaca, H. aurantiaca major, H. multiflora, H. forresti,* and most of the forms of *H. fulva,* are now in one of the long display beds.

Prominent in the Arboretum collection are hybrid varieties developed in his work at the New York Botanical Garden by Dr. A. B. Stout who was the pioneer of scientific daylily breeding and introduction. Other breeders well represented include H. P. Sass, Dr. Hamilton P. Traub, H. M. Russell, Mrs. Thomas Nesmith, and Carl Milliken. There are also clones from Carl Betscher, Amos Perry, Bertrand Farr, George Yeld, Paul Cook, Wyndham Hayward, Dr. J. B. S. Norton, Clint McDade, Lemoine Bechtold, W. B. Davis, David Hall, Ralph Wheeler, Mrs. Bright Taylor, Mrs. Hugh Lester, and a few others. The writer's named hybrids and some numbered seedlings are included in the planting.

For the most part, the many varieties are growing satisfactorily, in spite of the fact that the soil is extremely uneven in quality because of the leveling and grading of the area. Some few varieties have developed severe chlorosis which seems to be related to the type of soil and may indicate a deficiency of some kind. However, something more than simple nutrient deficiency is indicated by the fact that certain clones are severally affected while others alongside them are beautifully green. This is a problem to be studied, since it is being found in many parts of the country. During the past winter a serious infestation of aphids was also noticed in the collection, as well as elsewhere in the Arboretum. Heretofore daylilies have been thought to be free of this insect pest.

Present plans are to fill the remainder of the border areas allotted to the daylily test garden and then, as additional good varieties are acquired, to discard the less desirable hybrids, unless they are of historical importance. By gradually discarding and replacing we hope to maintain a complete and representative collection of modern daylilies that should be useful to visitors and should help gardeners to choose the best varieties to grow in their own gardens.

NAMES, NOTES AND NEWS

The Herb Society of America: Mrs. Robert K. Price of Philadelphia, national president of *The Herb Society of America,* was welcomed to southern California by officers and members of the Southern California Unit of this Society the latter part of April. She and her hostesses visited the *Los Angeles State and County Arboretum* in Arcadia, and *The Huntington Library and Art Gallery* and Botanical Gardens in San Marino.

In Arcadia, tour was made of the Arboretum grounds, including the potting sheds, greenhouses, aluminum lath houses, the recently restored landmark, Queen Anne Cottage, and the site of the proposed herb garden. Plans for the latter were outlined to Mrs. Price who expressed the conviction that it would be one of the unique herb gardens in America and a challenge to other Unit groups in the country. On the Arboretum grounds she had her first glimpse of redwoods, including the Dawn Redwood, re-discovered in China in 1944, after centuries of consideration of it as a fossil specimen; young seedlings of this species, *Metasequoia glyptostroboides,* are thriving at the Arboretum. Grass test plots were another source of keen interest.

At *The Huntington Library and Art Gallery,* an exhibit of several centuries of garden books, rare botanical books and herbals was opened for the benefit of the group; a tour of the gardens concluded the day's trek, leading through the rose garden in full bloom and fragrance, the Oriental and Camellia gardens, and finally the Desert Collection with its color-laden test plots of succulent ground covers and many desert exotics. A gift copy of "The Huntington Botanical Gardens, 1905-1949"—Personal Recollections of Curator Emeritus William Hertrich, was presented to Mrs. Price as a fitting momento of the afternoon.

From a release by Mary B. Darrow,
Recording Secretary, So. Calif. Unit, H.S.A.

* * *

Mr. Carl O. Erlanson, Head, and Dr. Walter H. Hodge, Assistant Head, Plant Introduction Section, United States Department of Agriculture, Beltsville, Maryland, visited the Los Angeles State and County Arboretum, during the month of April for conferences regarding the plant introduction aspects of the Arboretum.

* * *

Early in May the Arboretum received visits from Professor Guiseppe Martinoli, Instituto

Botanico, Universita, Cagliari, Italy; Dr. T. M. Tadros, Professor of Botany, Faculty of Science, University of Alexandria, Egypt, and Mr. Eugene Nasir, Gordon College, Rawalpindi, West Pakistan. These gentlemen, on a tour of Botanical Gardens of Southern California, also visited the University of California Botanical Gardens in Los Angeles, Rancho Santa Ana Botanic Garden in Claremont, the Huntington Botanical Gardens, and Earhart Laboratory at the California Institute of Technology.

* * *

The Annual May Festival of the American Begonia Society, Glendale Branch, announces its date as May 26th—too early for inclusion in *Lasca Leaves'*, summer issue Calendar, but for the record, Sylvia Leatherman is to be the speaker, and members invited to attend in their favorite gardening attire. Booths, plants, and refreshments featured.

GROWING NOTES

GEORGE H. SPALDING

If you are looking for a low shrub for a sunny corner, try *Melaleuca wilsoni*. Another worthwhile Bottle Brush from Australia with small lavender "brushes" set close to the stems among the needle-like leaves. It appears to be perfectly hardy, having survived one fairly severe winter in the open ground. The plants are very spreading and only moderately compact. The foliage is a good medium green presenting a good appearance at all times. Plants four years old are about 4′ in diameter and about 1-1½′ high. No difficulty has been experienced in growing them from seed, which germinated in thirty days.

Australia has given us several very worthwhile vines. The subjects of this note, *Kennedya rubicunda* and *K. nigricans*. in all honesty should be classed somewhere between those two commonly used terms, "chiefly of botanical interest" and "a useful ornamental." The first, *K. rubicunda*, in one year from seed has made a vine 9′ high with a spread of about 6′. It is planted along our chain link fence where it has reached the top and a little more (9′). It provides only a moderate screen but indications are that it will become quite thick if it survives a few winters. Its hardiness is somewhat in question since one previous attempt to grow it ended in failure during 1950. However, those plants were very young and the winter was extremely severe. *K. rubicunda* is a mass of dark red pea-shaped flowers at this writing (June 1) and has been for a month; it shows no sign of letting up. This is not a showy plant from any distance because the flowers are so dark; however, it is an interesting and useful vine. Seed requires no special care and should germinate in a week.

K. nigricans is similar to *K. rubicunda* but is more vigorous. Our plants of this species are three years old and have topped the 9′ fence and gone 10′ or more into an adjacent eucalyptus tree. The leaves are trifoliate and about 5″ across. The flowers are black with a small yellow spot on the keel. Of the two species *K. nigricans,* so far, appears to be the more vigorous grower and *K. rubicunda* the more ornamental.

Melaleuca cordata will probably never attain popularity as a landscape subject. It is definitely worthwhile but, in the Arboretum collection at least, is rather sparse of foliage and open in habit. Three year old plants are about 3′ tall and vase-shaped. The plant gives the appearance of a miniature *Euc. pulverulenta* with greener foliage and lavender pink flower balls, first at the ends of the branches, then flowering along the stem at the base of each leaf. The flower heads are 1-1½″ in diameter and very attractive. Seed will germinate in three weeks to a month. This Melaleuca is not as easy to grow as most of the genus. Why, we do not know. It appears that drainage in the containers is one critical factor. For the plant connoisseur this is a worthy subject.

BOOK REVIEW

HOWARD ASPER La Canada, Calif.

History of the Rose by Roy E. Shepherd. New York: The Macmillan Co. 263 pp. $4.75

"History of the Rose" is primarily a book for rose-growing specialists and hybridists; but it is also fortunately a book for the dedicated amateur, of whom there are many thousands. Freely admitting that the history of the genus Rosa has been mightily confused over the centuries, with long lapses, Mr. Shepherd still

takes the threads in his expert hands and comes forth with a sound and definitive volume.

The rose, it seems, has been a resident of North America considerably longer than the ancestors of the D.A.R. Fossil specimens in rocks of the Oligocene Epoch in Colorado and Oregon establish the rose as a resident for at least thirty-two million years, quite a while before the Mayflower.

As for the cultivation of the rose, there is some evidence, writes Mr. Shepherd, "that roses were cultivated by the ancient civilizations of China, western Asia, and northern Africa 5,000 years ago." About the year 500 B.C., Herodotus stated that roses composed of 60 petals were grown in the gardens of King Midas. In the year 300 B.C., Theophrastus described the roses of that era as having from 5 to 100 petals. During the long domination of the Roman Empire roses were important at all festive occasions. "Commercial rose production was most extensive in Rome and Egypt."

After the fall of the Roman Empire the rose was neglected except perhaps in a few monastic gardens. But the Arabs who invaded Europe brought with them roses from Persia. The Arab Empire extended from India to Spain, and roses from various lands were mixed, to the sorrow of the historian.

The rose as a medicinal remedy for many ills was celebrated by Pliny the Elder, who mentioned 32 remedies obtainable from this beautiful plant. In modern days, old Pliny has been approved to a certain extent by scientists who found that rose hips are rich in vitamin C.

In England, the Houses of York and Lancaster (1455-1458) fought a fierce civil war—War of the Roses—when the House of York wore a white rose as a badge, and the House of Lancaster a red rose.

The "Contents" of "History of the Rose" will give the prospective reader a complete idea of what he may expect. The twelve chapters are entitled: "General History," "A Group of Climbing Roses," "Chinese Roses and Some Historic Hybrids," "Four Asiatics and a New World Trio," "The French Rose and its Relatives," "Two Old World Roses," "North American Roses," "Rugosa Roses and their Allies," "Yellows—Austrian, Persian, and Scotch," "The Hybrid Perpetuals," "The Hybrid Teas," "The Polyanthas."

There is a Bibliography; also a General Index and an Index of Rose Names. There are 26 illustrations, but unhappily, in this age of color photography and color printing, all the illustrations are in black and white. Seems odd with roses.

In his introductory chapter, called "General History," Mr. Shepherd lists many persons all over the world who have been important in the development of the rose. Among them are several from California, including Paul Howard, Fred Howard, Howard and Smith, and Dr. Walter E. Lammerts whose latest contribution was the development of the All America Chrysler Imperial Rose at Descanso Gardens.

CALENDAR

The Annual Midsummer Shade Plant Show sponsored by The California Fuchsia Society, will be held July 31st and August 1st, 1954. Doors will be open to the public on Saturday from 2 p.m. to 10 p.m. and Sunday from 10 a.m. to 10 p.m. The show will be held in the north end of the main building at the beautiful, spacious Hollywood Turf Club in Inglewood, California.

Booth displays will be entered in competition by twenty-five branches of the California Fuchsia Society. These exhibits will occupy approximately 300 square feet each, and will depict landscaped gardens, outdoor living, and natural scenes. Individual entries vie for ribbons and trophies in many classifications. These will include Fuchsias, Begonias, African Violets, Ferns, Gloxinias, and many others. Commercial displays will be present to acquaint "the green thumber" with gardening procedures, new products, and advice.

A nominal admission fee is charged; parking without charge in the extensive parking area.

From a release by Loren Paulsohn, Show Chairman

* * *

American Begonia Society—Pasadena Branch: regular meetings of the year conclude with June meeting, the 3rd Monday, 7:30 p.m. at La Casita, 117 So. Arroyo Blvd. Speaker: Mrs. Jean Kerlin. Subject: "Begonia Growing Pains," a discussion of basic cultural needs. All summer meetings will be Pot Luck picnics. July 24, at 4 p.m., a potting demonstration will be given at Mr. and Mrs. George Johnson's, 1320 Ramona Road, Arcadia, dinner following. August 21, at 6 p.m., meeting will be at Col. and Mrs. C. M. Gale's, 40 No. San Rafael Ave., Pasadena. September 18, the branch will meet at Oakhurst, Arcadia, in the gardens of James Giridlian.

* * *

Southern California Camellia Society: no further meetings until November. Details of November meeting to appear in autumn issue of *Lasca Leaves.*

* * *

Plant Societies: please note that this column is designed to keep our readers posted on regular meeting dates of horticultural and botanical organizations, in the Los Angeles area particularly; and to carry announcements of significant programs occurring within the quarterly periods covered by spring, summer, autumn, and winter issues of *Lasca Leaves.* Press dates are the 1st of March, June, September, and December, to meet the dates of issue in April, July, October and January. Data required: official name of organization, meeting date, place of meeting, (subject announcement optional), and name of person responsible for release with address and telephone for reference. Send to Plant Societies Editor, Box 688, California Arboretum Foundation, Inc., Arcadia, Calif.

BOOK NOTES

Azaleas:

The Azalea Handbook. American Horticultural Society. 1953. $3.00. Up-to-date account of Azaleas and their culture.

Camellias and Magnolias:

Camellias and Magnolias. Royal Horticultural Society. London. 1950. Report of a conference held in April, 1950.

Crocus and Colchicum:

A Handbook of Crocus and Colchicum. E. A. Bowles. London. 1952. Discussion of each of the species groups with popular keys.

Freesia:

The Cultivated Species of Freesia. N. J. Sennels. Copenhagen. 1951. Culture, propagation, diseases and brief history of the botany.

Fruit Gardening:

Western Fruit Gardening. Reid M. Brooks and Claron O. Hesse. University of California Press, Berkeley, 1953. A handbook for the home gardener on fruit varieties; climatic adaptations; soil, water, and nutrient requirements; pruning and propagation; control of diseases and pests. Includes such tropical fruits as carissa, cherimoya, feijoa, guavas, jujube, papaya, white sapote, etc.

House Plants:

Plants Indoors. C. R. Boutard. Putnam, London. 1953. 18s.

Your Indoor Plants from Aspidistra to Zalacca. Juliana Crow. Weidenfeld and Nicolson, London. 1952. 10s. 6d. Two more volumes on house plants.

Idaho and Nevada:

Flora of Idaho. Ray J. Davis. Wm. C. Brown Co., Dubuque, Iowa. 1952. A technical manual of the native flora of the state.

Plants for Southern Nevada. John M. Fenley, James W. Orchard. Clark County Extension Service, University of Nevada, Las Vegas. A mimeographed booklet on recommended ornamentals.

Roses:

Buch der Rosen. Dietrich Woessner. Frauenfeld, Switzerland. 1951. A book on the use and culture of roses for amateurs and professionals. Illustrated with magnificent prints of color photographs.

Modern Roses IV, J. Horace McFarland Company. A uniform descriptive list of all roses in commerce or of historical or botanical importance. Compiled in cooperation with the American Rose Society.

Santa Barbara Flora:

A Flora of Santa Barbara. Clifton F. Smith. Santa Barbara Botanic Garden, Santa Barbara, California. 1952. An annotated catalogue of the native and naturalized plants.

South Africa:

Protected Wild Flowers of the Cape Province. Part 1, 1952, Part 2, 1953. Cape Provincial Administration, Cape Town. 2s. 6d. each. Colored plates of South African wild flowers.

The Woody Plants of the Bechuanaland Protectorate. Journal of South African Botany. Vol. 18, parts 1 and 2. Cape Town. 1952. Check list with brief descriptions.

Southwest:

Flowers of the southwest mountains. Leslie P. Arnberger. 1952.

Flowers of the southwest deserts. Natt N. Dodge. ed. 2. 1952.

Flowers of the southwest mesas. Pauline M. Patraw. ed. 2. 1953.

Three popular booklets available at $1.00 each, from the Southwest Monuments Association, Box 1562 N, Gila Pueblo, Globe, Arizona. Illustrated with line drawings by Jeanne R. Janish.

Yuccas of the Southwest. John M. Webber. U.S.D.A. Agriculture Monograph No. 17. 1953. 50c. Culture, economic uses and systematics.

Species and Cultivars:

Das Chrysanthemum. M. Marggraf and G. Hartmann, Eugen Ulmer, Stuttgart. 1951.

Freiland-Rhododendron. Johann Berg and Gerd Krüssmann. Eugen Ulmer, Stuttgart. 1951.

Mesembryanthemaceae. H. Jacobsen, O. H. Volk, and H. Herre. Eugen Ulmer, Stuttgart. 1950.

Three books for the professional and the amateur discussing the species and cultivars, their culture and propagation, pests and diseases.

Trees:

Native Trees of Australia. J. W. Audas. Whitcomb and Tombs, Melbourne. A new and enlarged edition of a useful reference book.

Trees of the Western Pacific Region. J. Hugo Kraemer. West Lafayette, Indiana. 1951. Descriptions of some of the common trees of the islands of the western Pacific and the adjacent Asiatic mainland. Illustrated with line drawings.

Trees. Southern California Edison Company, Los Angeles. 1954. A free leaflet with recommended tree planting lists for various climatic areas in southern California. Illustrated with many color plates.

Miscellany:

Ornamental Woody Vines for the Southern Great Plains. U.S.D.A. Farmers' Bulletin No. 2015. 1950. 10c.

Ornamentals Shrubs for the Southern Great Plains. U.S.D.A. Farmers' Bulletin No. 2025. 1951. 20c.

Ornamental Hedges for the Southern Great Plains. U.S.D.A. Farmers' Bulletin No. 2055. 1953. 15c.

Three bulletins summarizing results of test plants. Useful in inland areas of California.

Plant Diseases. The Yearbook of Agriculture, 1953. Washington, D.C. $2.50. An authoritative readable volume.

Sunset Western Garden Book. Lane Publishing Company, Menlo Park, California. 1954. $2.95. An up-to-date handbook for all gardeners.

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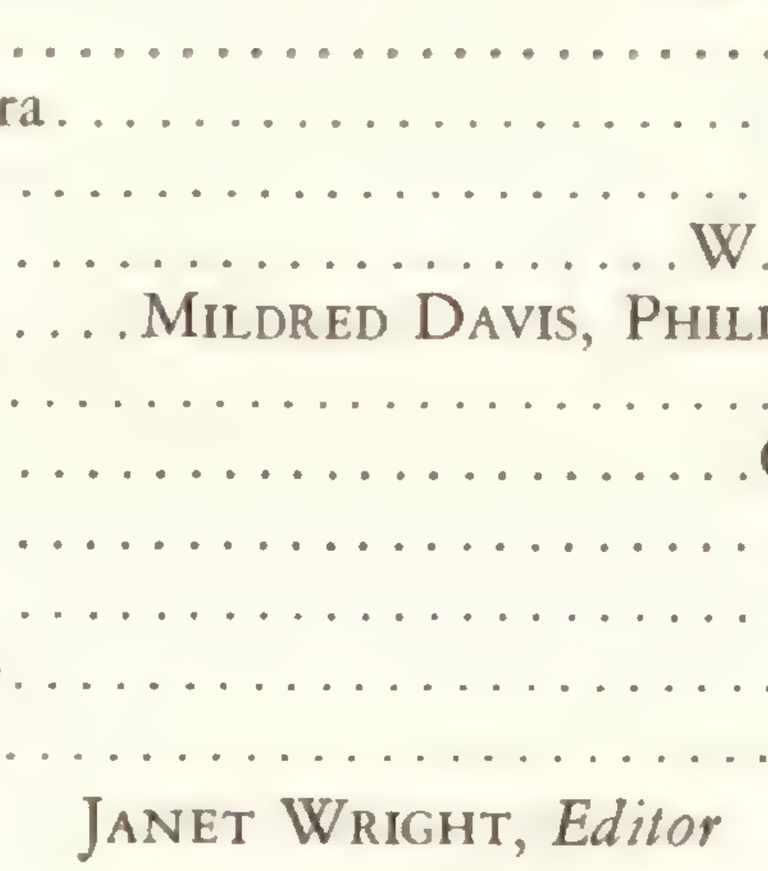

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THEODORE PAYNE

" . . . a tribute to Theodore Payne, plantsman and gentleman"

THEODORE PAYNE

PHILIP A. MUNZ

IT IS universally said that Theodore Payne has done more than any other individual in acquainting Californians with the beauty of their native plants and in interesting them in the use of these plants in their gardens. Mr. Payne tells me that real interest in the use of natives began in 1915. You will remember that was the year of the expositions in San Francisco and San Diego. To have something for visitors in its own area Los Angeles appointed a committee of 100 to develop various things for them to see. Among these and largely as a result of the efforts of Mr. Payne, there was created in Exposition Park a native garden which contained over 250 species. This planting attracted much attention and received considerable publicity. School children were brought to see it and visitors came by the thousands. Many left with the wish to grow some of these plants at their own homes only to find that they were for the most part unavailable at nurseries. In fact, in Southern California about the only place where they could be obtained was Payne's Nursery.

This interest in the wild plants of California began as a hobby with Mr. Payne and for many years remained an entirely unprofitable one financially. But it was a natural one for an English boy brought up in a Quaker family, the mother of which loved wildflowers. She taught her son to know them from his early childhood, not only so that he could recognize them but he knew their haunts. Born June 19, 1872 at Manor Farm, Church Brampton, Northampshire, and growing up in the country, young Theodore had his own garden from an early date and it was soon settled that of the six boys in the family he was to be a horticulturalist. He was taught at first by a governess in the home and later at the Ackworth School in Yorkshire, where there was a flourishing natural history society. Theodore was the secretary of the botanical section at the same time that the president was a boy with the surname Rowntree. This boy was a cousin of the husband of Lester Rowntree who later made the name so well known in California horticultural circles.

After three years at Ackworth, Theodore was apprenticed for a term of three years to J. Cheal & Sons, Lowfields Nurseries, to learn their business. He worked from seven in the morning until six at night and again in the evenings and in the first year received the magnificent sum of five shillings a week. But the training was very complete, going into every phase of horticultural work then available, including office work as well as propagation, seed business, nursery practice and landscaping. Altogether, he was with this company for four and one-half years. He then came to America and headed for California, stopping in Chicago for the World's Fair. There he had his twenty-first birthday. His first job in California was to pick apricots.

He soon contacted a nurseryman who got for him a job as gardener at Madame Modjeska's ranch in Santiago Canyon in Orange County. His training and interest were of course in the nursery business, but he found his three years at Modjeska's of value in acquainting him with growing conditions in California. He met also many interesting people who came to visit Modjeska in her summer vacations, among them Otis Skinner and Maud Durbin (later Mrs. Otis Skinner). In 1896 he went to Germain's and was there for about seven years. First he had charge of seeds, including tree and shrub and palm seeds, and got out the catalogues. Later he became manager. He went to Europe in 1897 and again in 1903, visiting not only England but leading nurseries and seedsmen in many countries on the continent. He established connections that proved of great value to him afterward; for on returning to Los Angeles in 1903, he went into business for himself.

He purchased a nursery and lease at 440 So. Broadway that had been founded in 1890 by H. A. Brydges and had been taken over in 1892 by Lyon and Cobbe. Payne bought it from Hugh Evans. Here he carried on a general seed and nursery business, specializing in flower, tree (especially eucalyptus), shrub and other seeds, of which he had the most complete assortment in the West. Now began his hobby with wild flowers, in which there was so little general interest that Mr. Germain told him he was foolish to spend his time and money on them. In fact the rest of the business had to carry them. For years he sold great quantities of eucalyptus seed; his record book shows items like a single order for 125 pounds of seed of *E. globulus* and 400 pounds of *Washingtonia filifera,* as well as large amounts of *Cobaea, Grevillea,* etc. These orders came largely from European and Eastern firms.

Mr. Payne says that at that time there were few nurseries outside of Los Angeles so that people came to the city to make their purchases. He acted as a central clearing house, other nurserymen listing their stock with him. Thus he sold in one year five carloads of citrus trees in Ventura Co., and in another, five in Sacramento Valley.

In 1907 Theodore Payne married Alice Noyes, a native daughter, whose grandfather had come to California in a sailing vessel. Mrs. Payne taught school for some years. Everyone who knows Mr. Payne well is acquainted also with his friendly and charming wife, since for almost half a century they have appeared together at all public and social functions in a relationship that may well serve as a model of mutual understanding and partnership.

During the early years Mr. Payne sold seeds of California natives wholesale in the East and Europe, but there was no local demand until 1909, at which time he had an exhibit in the Pasadena Flower Show and got out a little Catalogue of wildflower seeds. Then local interest really developed after 1915 and his hobby gradually became his business, allowing him to go almost exclusively into work with natives. He has brought into cultivation about 430 species, some of which had been introduced into European gardens long before, but not locally. Many of these have not remained in the trade. He introduced the Arizona Cypress about 1909, having an order for 10 pounds of seed from Thomas Meehan in the East. A man collected 40 pounds for him and Payne gradually sold this. The next year he had an order from France for 100 pounds. Among other introductions were *Lupinus Paynei* in 1919, *Fremontia mexicana* in 1919, *Berberis Nevinii* in 1920, *Ceanothus cyaneus* in 1922, *Cupressus Forbesii* in 1935. Other introductions or re-introductions that were less local were *Tithonia speciosa* in 1918, *Aquilegia longissima* in 1929, *Pike Sapote* in 1926.

No small part of his work has been planning estates and grounds. Among these may be mentioned the Armour estate in Pasadena and that of Mrs. Laura J. Knight of Santa Barbara of which he had charge for nine years. With Ralph Cornell he did a large mass of native planting on the Pomona College campus about 1924. As a result of a talk which he gave to the Garden Club at Santa Barbara, Mrs. Bissell later wrote him that he had inspired and helped create the Santa Barbara Botanic Garden. When Mrs. Ernest Bryant planned the Rancho Santa Ana Botanic Garden, she naturally turned to Theodore Payne and for some years bought much of her seed from him. Thus, to cite just a few examples, it is evident that his influence in the region has been wide.

Mr. Payne has received many honors and much recognition for his horticultural activity as evidenced by some of the articles written about him and his work: Sunset Magazine in 1918, Christian Science Monitor in 1946, Nature Magazine in 1947, American Home in 1948. He is a Fellow and Life Member, Past President, and Director of the Southern California Academy of Sciences; a Life Member of the Wilderness Society, a Fellow of the Royal Horticultural Society. Many of the readers of *Lasca Leaves* will remember the honor paid him on his eightieth birthday, in June, 1952, by the Southern California

Horticultural Institute. And so now, it is a pleasure to be able to record a bit of the history of this mild-mannered and pleasant man, who has contributed so greatly to the development of horticulture in Southern California. He has made Southern Californians aware of some of the beauty that Nature placed in their state in the way of native plants. He has taught them how to use them. Here is a greeting and tribute to Theodore Payne, plantsman and gentleman.

* * *

TABEBUIA UMBELLATA

Tabebuia umbellata (Sond.) Sandw., *Lilloa* 14:136. 1948. (*Tecoma umbellata* Sond.), in *Linnaea* 22:562. 1849; Bur. et K. Schum. in Mart. Fl. Bras. 8, Pt. 2: 335. 1897.

To our knowledge this is the first species of *Tabebuia* to meet with some degree of tolerance to southern California winters, at least in the past two relatively mild seasons.

T. umbellata, "Ipé Amarelo," a native of southern Brazil, is a small to medium sized tree which flowers after the spring leaf-fall, becoming a mass bouquet of good clear yellow blossoms during the latter part of April or early May. The inner throat of the blossoms is lined with several maroon-purple, narrow stripings. Each umbel-like inflorescence has from three to eight flowers, about two and a half inches long with the corolla limb spreading to nearly one and a half inches.

The branching of the young plant is very characteristically dichotomous. In the axis of each forking branch and in the terminal position, the flower buds form in late summer and autumn. The leaves on two young plants observed are persistent through the winter, dropping in the early spring, six weeks or so before blooming which is followed by new leaves.

Two young plants were received by the Arboretum from Evans and Reeves Nursery in October, 1950, and accessioned here under our number 50-S-1632.

One of the plants grown at the Arboretum which was scarcely "hanging on" has very recently died through self-girdling of twisted roots. The other plant, grown in northern Arcadia, has made slow but steady growth. This latter plant bloomed well in the spring of 1953 and again this spring, 1954; it is now slightly over three feet tall and as much broad.

Because of its probable frost tolerance in its southernmost natural distribution in Brazil, this species is worthy of wider trial and introduction in the warmer areas of southern California. Of the species found in Central American, West Indian and northern South American regions, we have as yet seen no representaitves which hold promise of surviving our southern Californian winters. It does appear, however, that there is reasonable hope of our growing other species of this strikingly beautiful genus among flowering trees from the southernmost limits of its natural distribution in South Brazil, Uruguay and Argentina.

On his recent trip to that part of South America where Tabebuias are found, Dr. Ayres was able to send us seed of six other species which will be tested and carefully watched.

For those readers who may be interested in seeing illustration of *T. umbellata,* as well as several other comparative species, reference is made to the charming "Album Floristico," published by the Ministerio da Agricultura, Serviço Florestal, Rio de Janeiro, Brazil, 1940, where the species are referred to the genus *Tecoma.*

Plate I. A photographic reproduction of *Zinnia elegans* Sessé and Moc. (synonym, *Z. violacea* Cav.) from an early lithograph in Cavanilles (1791). The engraving was published soon after the introduction of this species into Europe.

THE HISTORY AND PARENTAGE OF ZINNIAS IN MARCH

RICHARD M. BEEKS

SEVERAL authors have attempted to classify Zinnia cultivars[1] into specific, isolated packages. C. F. Poole gathered them into four groups using doubleness as a lone criterion ("USDA Yearbook" 1937). L. H. Bailey (1925) arranged them according to variableness of size. Though the discontinuities may have existed in 1925 and 1937, no such separable units can be distinguished today. From the smallest single to the largest double there now exists a continuous gradient of both size and doubleness.

Though the economic importance of the ornamental annual, Zinnia, is a fact that has been widely publicized, investigations of the basic genealogy of today's Zinnia cultivars have been quite superficial. In order to establish a breeding program which would be economically efficient and genetically sound, evidences of parental lines connecting the modern cultivars to the original wild forms were gleaned, bit by bit, from the horticultural literature of the past. As a result of this investigation, an attempt has been made to classify the modern Zinnias into natural, ancestral groups.

The Zinnia cultivars probably have been derived from five basic parentages (see below, Fig. 1): (A) the wild species *Z. elegans,* (B) the wild species *Z. angustfolia,* (C) the hybrid = ♀ *Z. elegans* x ♂ *Z. angustifolia;* the reciprocal cross, (D) the species *Z. linearis.* Today, however, one cannot state that any of these original ancestral stocks, with the exception of (D) *Z. linearis,* have been retained without endless contamination from the other three.

It sometimes becomes exceedingly difficult to know which previously introduced forms have been used in the development of new cultivars. Undoubtedly, plants of the 'Giant Mammoth' strain (see below), as well as those of hybrid ancestry have been utilized repeatedly in Zinnia breeding; however, since the pedigrees of the progenies were not recorded, the source of their inheritance is now obscured.

The most recent cultivar shown in Figure 1 is 'Giant Dahlia,' 1919. Nearly all of the basic variation present in today's cultivars had been selected by that date. Consequently, modern Zinnia breeding mainly consists of finding new combinations by crossing old forms. The following cultivar introductions are classified according to their postulated parental relationships:

(A) Z. ELEGANS—Shortly after the late eighteenth century introduction of the purple *Z. elegans* into the Royal Gardens of Madrid, the species produced viable seed. In 1796, Professor Casimiro Gomez Ortega, Director of the Botanical Gardens of Madrid, forwarded seed to the Marchioness of Bute (Andrews 1797). Before long this New World curiosity was distributed throughout the gardens of Europe.

From 1796 to 1829 the species exhibited little apparent change in form or color. In 1829 a scarlet form, *Z. elegans* 'Coccinea,' was introduced, and its segregates produced flowers of variable colors (Focke 1881). In spite of the color diversity which 'Coccinea' had introduced, there were several factors at this time which kept Zinnia from achieving the popularity it was to have in the future. In the first place, Zinnia propagation was difficult in Northern Europe's humid, cool climate. Secondly, horticulturists had not been successful in replacing the wild, single form with a true double. In fact, it was

[1]The word 'cultivar' is of recent origin. In this paper its use will be applied to "those special forms which have originated or are maintained only in cultivation." The word 'variety' will be reserved "for those forms of cultivated plants which are known to occur in the wild" (International Horticultural Congress 1952).

not until 1858, that the double Zinnia became a reality.

Some confusion has resulted from contradictory reports pertaining to the original source of the double Zinnia. "The Garden" (1895) is the Zinnia history reference most used by present day growers. This journal cites the double Zinnia as having been introduced from the West Indies. On the other hand the publication, "La Belgique Horticole," (1861) established a prior record that is more complete. It asserted that the double Zinnia seed was received by Carter and Holburn of England and Grazan, a horticulturist of Bagneres, France, from a correspondent of the province "Oude," (Oudh), British India, in 1858. "Gartenflora" (1862) confirms the seed source. Vilmorin and Co. obtained seed from Grazan.

"Gardeners' Chronicle" (1860) received a shipment of cut double Zinnias from Vilmorin and Co., which was described as being very similar to the double "pompome chrysanthemum." The flowers measured from two to three inches in diameter, and exhibited colors of "purple, deep rose, light rose, rose striped, red orange red, orange, buff, and various shades of these colors." The rays displayed a metallic sheen.

The double form originally was given the title of *Z. elegans* 'Flore Pleno.' According to Weddle (1945) later synonyms of this double are as follows: Z. 'Pumila,' Z. 'Cut and Come Again' and Z. 'Cut and Come Again' dwarf.

In 1874, Haage and Schmidt introduced a dahlia-flowered cultivar, *Z. elegans* 'Flore Pleno' ("Gartenflora" 1874). Evidently this form did not become established at the time, for Bodger Seed Company's 'Giant Dahlia' introduction in 1919 was considered to be a new important trend in plant habit and flower form (Weddle 1945).

Chr. Lorenz of Erfurt, Germany, developed the first 'Giant Mammoth' strain. It was released in 1886 under the exhaustive title of *Z. elegans* 'Robusta Grandeflora Plenissima' ("Gartenflora" 1886)! The plants, which ranged from twenty-eight to forty inches in height, produced flower heads measuring up to six inches in diameter. The influence of the 'Giant Mammoth' strain is quite evident in all of the larger Zinnia cultivars of today.

The following introductions were either as large as or larger than the *Z. elegans* species and, therefore, are included in its direct ancestral line:

The 'Scabiosa' flowered form was developed and introduced by Charles Huber and Co. in 1895 ("Revue Horticole" 1895). This imitator Zinnia is a very desirable plant, at its best. However, two serious form deficiencies still exist: (1) the form has not become fixed; (2) there are only a few true colors offered. (Weddle 1945).

Perhaps the forerunner of the modern 'Giants of California' was the flat-headed 'Tagetes' flowered cultivar. "Revue Horticole" (1896) reported it as a new French introduction.

Another modern favorite is the quill-rayed 'Fantasy.' Although this type was offered as a new cultivar in 1935, Weddle (1945) says that this form has been listed in commercial seed catalogues since 1902 under the name of 'Frisé.' "Revue Horticole" (1904) records 'Frisé' as having been developed by Herb of France. Several other recent cultivars have utilized this mutant by varying the habit of the plant and the compositional form of the heads.

The 'Cactus' flowered Zinnia made its appearance in France in 1914 ("Revue Horticole" 1914). The rays are fluted, i.e., the margins curl upwardly, exposing the harsh under surface. It is seldom grown in the modern garden though seed is still available.

(B) Z. ANGUSTIFOLIA—The wild species of *Z. angustifolia* was transported from Mexico to France in 1825. As in the case of *Z. elegans,* the natural, single flowered forms spread throughout the gardens of Europe as a New World curiosity. Some popularity was gained when the German horticulturists Haage and Schmidt developed the cultivar double, *Z. angustifolia* 'Flore Pleno' ("Gartenflora" 1871, 1872). Even though later stock improvements have been introduced, cultivars of this species have never become extensively valued as garden subjects.

Weddle (1945) remarks that 'Navajo' or the 'Gaillardia' flowered cultivar "arose from crossing *Z. elegans* with *Z. angustifolia*." Evidence has not been found to substantiate this statement. "Revue Horticole" (1914) described 'Gaillardia' as a newly developed form but did not mention a possible hybrid parentage. The heads are larger than those typical of the species; however, this increase in size probably has come about by means of several mutations similar to those which may have produced *Z. elegans* 'Robusta.'

(C) ELEGANS - ANGUSTIFOLIA HYBRIDS—The importance of *Z. angustifolia* became established primarily because of its use as a hybrid parent. Focke (1881) reports that L. Lillé of Lyon, France, successfully utilized it as the seed parent in a cross with *Z. elegans* 'Coccinea.'[2] Lillé obtained one "very floriferous" F_1 progeny and seventeen F_2's which appeared to be intermediate between the original parental species, but when they were critically compared with one another, they proved to be quite variable. Haage and Schmidt cultivated this cross very extensively over a ten year period. The selected double cultivars were released on the market in 1876 under the collective title of Zinnia 'Darwini.' The cultivars of this hybrid group were described in "Florist and Pomologist" (1876) as follows: 'Nana Compacta,' small heads on a compact plant; 'Pyramidilis,' cone-shaped heads on a plant of medium stature; 'Major,' both plant habit and heads larger; 'Vitata,' ligules of ray flowers striped white on purple, purple on white, yellow on crimson, and purple on sulfur yellow.

It should be noted that all of the above forms were smaller in habit and flower head than *Z. elegans* 'Flore Pleno.' The question might be asked whether all of the dwarf *Z. elegans* cultivars received their diminutiveness from *Z. angustifolia* or whether the characterization has been derived partially from a *Z. elegans* dwarf mutant. So far there does not seem to be any complete answer to this question. Literature supplying substantial evidence of a *Z. elegans* mutation for dwarfness has not been found. Until such evidence comes to light, it may be assumed that the cultivars ranging between *Z. elegans* and *Z. angustifolia* are derived, at least in part, from an elegans-angustifolia hybrid ancestry. The reciprocal cross of the 'Darwini' hybrid was accomplished in 1887 when *Z. elegans* 'Alba Flore Pleno Tom Thumb' became the cultivar hybrid of ♀ *Z. elegans* 'Nana Flore Pleno' x ♂ *Z. angustifolia* 'Flore Pleno' ("Gartenflora" 1887). Supposedly this cultivar is composed of the largest flowers on the smallest plant, but so far this ideal has been attained only in a few individuals (Weddle 1945).

There are three small-flowered elegans-angustifolia cultivars whose ancestry and present status are not properly known. "Gartenflora" (1889) and "Revue Horticole" (1889) reported that Vilmorin introduced the new form 'Lilliput.' 'Nains Pompons' was developed by Ch. Molin of France and introduced by Vilmorin-Andrieux and Co. in 1892 ("Revue Horticole" 1892), but Weddle (1945) claims 'Pompon' to be another 'Lilliput.' To further complicate matters, Vilmorin introduced 'Nains Lilliput' in 1894 ("Revue de L'Horticulture Belge" 1894). Since no record for the introduction of the very small 'Cupid' has been found, there is a possibility that 'Nains Lilliput' was the prior name for this cultivar.

The most recently recorded elegans-angustifolia hybridization occurred in France in 1910. "Revue Horticole" (1910) reported that "a new race of simple flowers of new hues of color" resulted from the cross, ♀ *Z. elegans* x ♂ *Z. angustifolia*. The progenies were given the name of *Z. elegans* 'Hybrid Varié.' Except for this brief reference, the history of the group appears to be lost.

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[2]Records of the exact date of this cross have not been found. However, it might be postulated that the event occurred before the 1858 introduction of the double elegans cultivar inasmuch as Focke (1881) qualifies neither parent as being double.

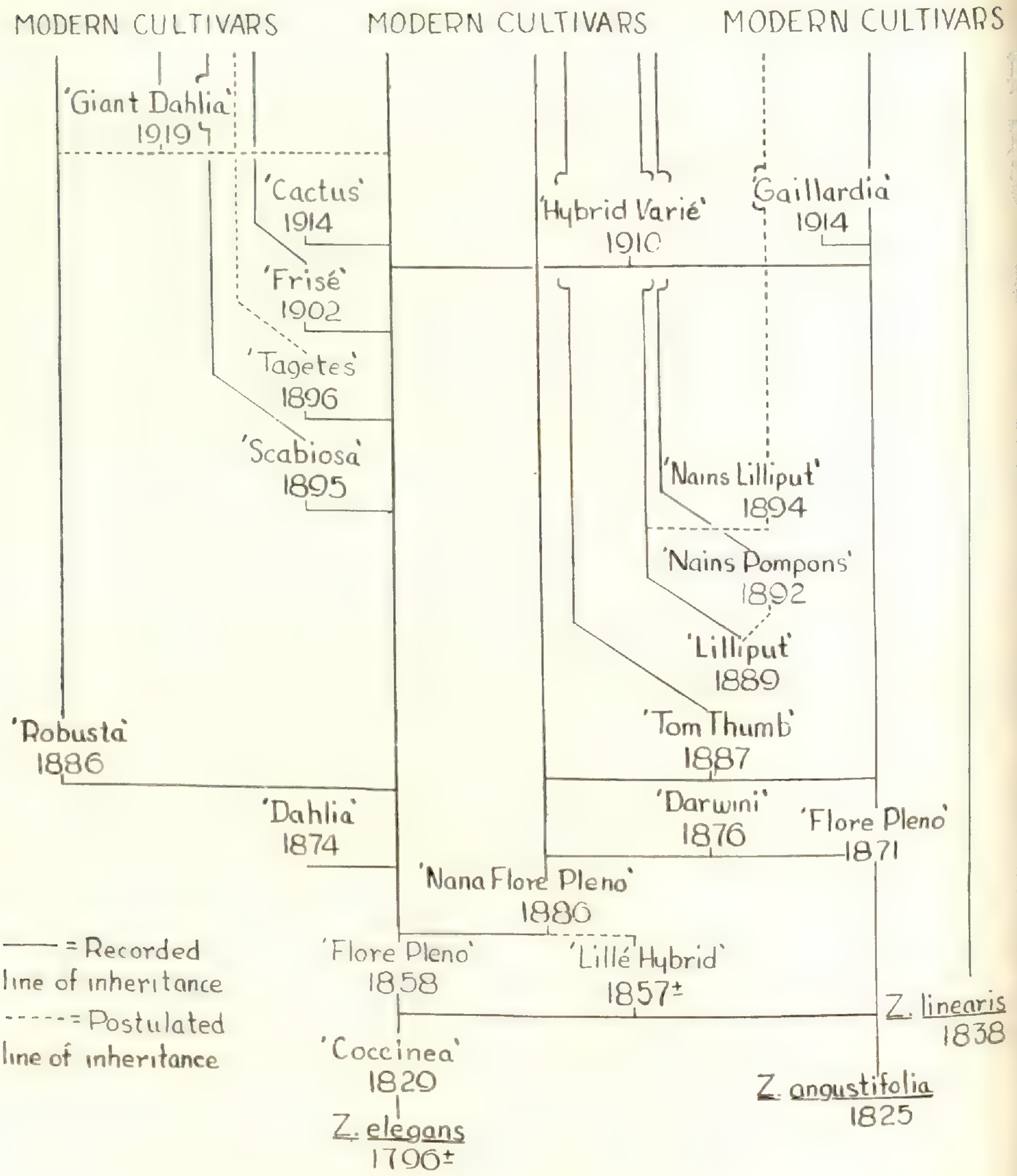

Fig. 1. Diagram showing the date of origin and the line of inheritance of Zinnia cultivars and species to 1919

(D) ZINNIA LINEARIS—The Mexican species, *Z. linearis*, has remained in cultivation since its English introduction in 1838, without exhibiting any major morphological variations. In Alipore, India, Percy-Lancaster (1944) annually grew "hundreds of thousands of seedlings" in search of phenotypic variations which might be of horticultural value. In spite of the large number of individuals grown, only two cases of variation were found, and these were color changes of minor importance.

This homogeneity and non-contamination from the other herbaceous species are not surprising if the corresponding chromosome complements are compared. The chromosomes of *Z. linearis*, n=11, are less than one-half the size of the chromosomes of the other herbaceous Zinnias, n=12 (Beeks 1954).

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BIRD NOTES

National Geographic Magazine, Vol. CV, No. 4, April, 1954, offers:

1) "Seeing Birds as Real Personalities"—Hance Roy Ivor. (Student of wildlife, working in bird observatories in Ontario, Canada, under Canadian government authority.)
2) "Bluebirds on the Wing in Color"—Bernard Corby and H. R. Ivor. 16 Kodachromes, showing bluebird in stages of movement from one perch to another, 4 feet distant; a beautiful study of wing movement required as a starting balance and as a brake, in flight, and finally the springy legs absorbing the landing shock.
3) "Honey-Guide—the Bird that Eats Wax"—Herbert Friedmann and Walter A. Weber. 8 illustrations, 4 paintings in natural color. (H. Friedmann, ornithologist, biologist, and authority on parasitic birds; Curator of Birds at Smithsonian Institution, Washington, D.C.

Nature Magazine, Vol. 47, No. 5. May, 1954.

1) "Eric Hosking, England's Top Nature Photographer"—James Fisher, who suggests that perhaps there is no such thing as "the best nature photographer," since the work of George Yeates is on a par in another way, so are "the brilliant Swede, Swanberg, and the Americans, Cruickshank, Porter and Peterson, to mention only a few."
2) "Feathered Plebians" — E. Laurence Palmer. Illustrations by Louis Agassiz Fuertes. Drawings. 4 pages tabulation of comparative descriptions, habits, etc.: a) Physical description; b) Range and Relationship; c) Reproduction; d) Ecology; e) Economy. Laurence Palmer is Professor Emeritus of Nature and Science Education, at Cornell University, Ithaca, N. Y., and Director of Nature Education, The American Nature Association; also conducts the School Page in *Nature* Magazine.

A footnote in the above mentioned issue of *The National Geographic Magazine* cites a recently published book, "Stalking Birds with Color Camera"—Dr. Arthur A. Allen, Ornithologist at Cornell University, and National Geographic Magazine author. Edited by Gilbert Grosvenor; published by *The National Geographic Society.* Illustrations include 331 from natural color photographs. $7.50 in U.S. and possessions; elsewhere $7.75; postpaid.

CULTIVATION OF METASEQUOIA

MAUNSELL VAN RENSSELAER, *Director Saratoga Horticultural Foundation*

SIX YEARS have now passed since *Metasequoia glyptostroboides,* popularly known as the dawn redwood, was introduced into the gardens of North America. During this period, horticulturists have had an opportunity to work out techniques of propagation, to study the growth habits of this interesting tree in its new surroundings, and to make a tentative evaluation of its possible usefulness as an ornamental. There are now several thousand specimens growing in gardens, parks, public grounds and arboreta in various parts of the Pacific Coast, and hundreds more are being planted each year.

The fascinating story of the discovery in China of the dawn redwood and its subsequent introduction in 1948 to North America and other parts of the world has been reported in many horticultural journnals and periodicals during the past few years. A recently published paper in Sweden lists one hundred thirty-seven articles about the tree from eighteen countries, in fourteen languages.

Known previously only in the fossil record, this remarkable deciduous redwood was thought by paleobotanists to have been extinct for millions of years. Needless to say, widespread interest was aroused in botanical and horticultural circles by the chance discovery in 1944 of several hundred living representatives of the species in a vigorous, healthy condition in a remote part of Szechuan Province in central China. Studies of fossil stems, leaves, and cones, some of which have been well-preserved, convince investigators that this species was once widely distributed over Asia and North America. Now it is apparently confined, in remnant colonies, to a small area some 300 square miles in extent.

When Dr. E. D. Merrill, former Director of the Arnold Arboretum in Massachusetts, first examined botanical specimens of *Metasequoia* in 1946, he became interested in obtaining seeds and accordingly sent funds to China to finance an expedition for this purpose. The search was successful and the first seeds to reach the outside world, some two quarts in quantity, arrived at the Arnold Arboretum in January, 1948. Seeds planted the day they reached the Arboretum began to germinate in less than two weeks. Later in the same spring, Dr. Ralph W. Chaney, paleobotanist of the University of California, made a strenuous and hazardous journey into central China to examine personally living specimens of *Metasequoia* in the few remaining stands. Since 1948, seeds and seedlings have been widely distributed throughout the world by the Arnold Arboretum and by the Save-the-Redwoods League. Wherever the species has flourished under conditions of cultivation, it has proved to be a vigorous, rapid-growing tree, at least in its youth; reports of growth of three to four feet a year are common.

Of interest to western horticulturists is the fact that the dawn redwood differs from its relative, the California redwood, *Sequoia sempervirens,* in the following noteworthy aspects: 1. It is fully deciduous, while the latter is evergreen, holding its leaves for several years. Prior to falling in late autumn, the leaves of the dawn redwood assume a bronzy hue. 2. The branches of the dawn redwood are mostly ascending, while those of the California redwod normally stand at right angles to the trunk or frequently are markedly deflexed. 3. The branches of *Metasequoia* are symmetrically arranged in opposite

pairs with each pair standing at right angles to the pair below. 4. The ovulate cones of the dawn redwood are borne on long naked stems, while the staminate catkins resemble those of *Taxodium*, another member of the redwood family. 5. In the wild, the California redwood is a much larger tree than the dawn redwood.

Metasequoia has found the Pacific Coast to its liking. The tallest specimen in North America, according to Dr. Chaney, is in the garden of Mr. and Mrs. James R. Brehm, at Pasadena, California, growing on a sunny, moist, well-drained hillslope facing southeast. When planted in March, 1949, it was a fifteen-inch seedling. In September, 1952, it was measured by Mr. Brehm and found to be twenty-four feet in height—an average seasonal growth of nearly six feet. During the next year, it increased only two feet in height so that in September, 1953, it was twenty-six feet tall. When I examined the tree in May, 1952, I found most of the growth to be upright, without normal lateral growth, so that it is much more slender than the average of its species, most of which are pyramidal in outline. Another California specimen, planted on the grounds of the post office at Palo Alto on Arbor Day in 1949 by the California Arborists Association, measured twenty-two feet in height in May, 1954. Before the removal of one of its trunks in early 1952, this was a doubled-trunked specimen; the remaining trunk had a circumference of twenty-six inches at the base in May, 1954. There are hundreds of other rapid-growing specimens of dawn redwood in various parts of California. The Palo Alto tree and another growing in the garden of Mrs. Clyde Kennedy in Saratoga bore cones in 1953, perhaps the first to be produced in California.

According to reports received from Victoria, British Columbia; Seattle, Washington; and Portland, Oregon; *Metasequoia* appears to be hardy and is flourishing in the Pacific northwest, though its growth is not so rapid as in California. This condition of slower growth will doubtless prove an advantage, with the probability of more shapely trees. Fine specimens, from five to ten feet tall, are growing in that region. Two of the 4-year-old specimens in the Hoyt Arboretum in Portland produced cones in 1952, and this is said to be the first fruiting occurrence of the species since its return to North America.

Within a few months after the germination of the first seeds of *Metasequoia* at the Arnold Arboretum, it was found that asexual reproduction of the species was possible. Since then, propagation by cuttings has become a common practice. As an example, 3-inch greenwood cuttings were taken in August, 1951, at the Saratoga Horticultural Foundation and placed in the propagating greenhouse in a medium of spongerok, without bottom heat. These began to root in less than three weeks and were potted in the fifth week. In one year, these vigorous plants (in gallon containers) ranged from 30 to 40 inches in height. Hardwood cuttings, ranging in diameter from the size of a match to that of a pencil, were taken in February and left outdoors in a medium of three parts sand and one part peat. The slender cuttings were the first to root, and these were potted in June. The heavier cuttings were potted in August. For western conditions, we recommend propagating by greenwood cuttings at any time from June through August. Since the seed supply in this country has long been exhausted and since, under present conditions, it is impossible to obtain additional seeds from China, it is indeed fortunate that the dawn redwood may be reproduced vegetatively in quantity from the living specimens now on hand. In the interest of wider distribution of the species, it should be reported that the tree is listed by many nurseries throughout the United States.

Because of the probable ultimate size of cultivated specimens of dawn redwood, it is doubtful that the tree has a place in the average home garden. However, its fascinating history and potential educational value, coupled with the widespread popular interest in its unique qualities, make it a valuable exhibition subject. Now that it is readily available, it should

be widely planted, preferably in groves, in public grounds and parks in all regions where it thrives. Deep loamy soil and ample moisture are desirable for healthy growth. Very little fertilizer is necessary. An example of the sort of experimental plantation that should be made somewhere in California is described in a report of a single forest planting of some 2000 trees on a selected site in Great Britain.

NOTE: The Saratoga Horticultural Foundation, Inc., Saratoga, Calif., held its third annual Board of Councillors meeting on Sept. 25, 1954. The Foundation, a non-profit corporation, specializes in growing selected stock of shade trees and native shrubs.

Spear Lily (*Doryanthes Palmeri* W. Hill)

AUSTRALIAN COUNTERPART OF THE AMERICAN AGAVE AND FURCRAEA

WILLIAM HERTRICH

The language of ancient Greece provides derivation of the generic name of our subject, *Doryanthes Palmeri* W. Hill (*Dory,* "spear," *anthos,* "flower"), known by poetic license as Spear-Lily. New world Australia is the native habitat. *Doryanthes Palmeri* belongs to the Amaryllis family (*Amaryllidaceae*) and is related to Furcraeas and Beschonerias, many species of which are grown in the Huntington Botanical Gardens. *D. Palmeri* is indigenous to Australia, and was flowered for the first time as a cultivated plant, in the Botanical Garden at Brisbane, in September, 1870. According to information available, Mr. Walter Hill, Superintendent of the Brisbane Garden, discovered the plant on one of his botanical exploration trips in the year 1860 near Moreton Bay, Queensland.

Another species, *D. excelso* Correa, less spectacular than *D. Palmeri,* preceded the former into cultivation, and was first described and illustrated in *Curtis Botanical Magazine*. t. 1685, recorded as first flowering in 1814. At the time of the flowering of this prototype, *D. excelso*, in Kew Gardens, it caused considerable notice when producing a scarlet flower at the terminal of a flower stem without roots. The stalk had been sent to Kew from "New Holland"—former name of Australia—in cut form many months before. This demonstrates the tenacity of the stock of the plant to retain life under most adverse conditions. A parallel case of such an instance is cited with regard to *Yucca (filifera) australis, Curtis Botanical Magazine,* t. 7197, 1891:

"The trunk was sent to Kew in October, 1888, by Mr. C. G. Pringle from Monterey, through Professor Sargent. When it arrived at Kew, it apepared to be quite dead, and the trunk was consequently placed in the Museum of Economic Botany. After remaining there two years it put out rudimentary leaves and an inflorescence, and on being transferred to the Temperate House these were fully developed in September, 1890. The leaves are shorter than in the wild type and the panicle is erect and less dense."

The species *D. Palmeri* has been in the Huntington Botanical Gardens for about thirty years, and during that period frequent blooming has occurred. Like the Furcraeas, Doryanthes dies after blooming, but because the plants usually produce sucker growth before flowering, though only occasionally in the last year of its existence, propagation may be carried on by means of these young shoots, which can be easily detached from the mother stock. In turn the sucker shoots develop and produce flowers in the course of a few years. The plant itself forms a rosette of about one hundred leaves: of a good green color, surfaces ribbed, flexible, about three to five feet long by four to five inches maximum width, tapering from the center toward both ends, margins smooth, no end spines.

The stock supporting the cluster of flowers reaches a height of from six to nine feet and is three to four inches thick. The crimson flowers, white within, form a rather compact inflorescence, and are visited by numerous humming-birds for the nectar. The blooming season lasts about two months. The plant is of considerable value in landscape work, in grouping with other foliage plants, or as single specimens, being especially attractive for patio plantings.

In southern California, Doryanthes grows well in various types of soil, and under various exposures. In the interior sections, subject to heavy frosts, or in extremely dry and warm localities, some protection is needed. It is a fact that soil rich in humus and fertility encourages luxuriant growth, leaves become longer and slightly broader and perhaps more numerous.

A third species, *D. Guilfoylei,* F. M. Bailey, perhaps a form of *D. Palmeri,* from North Queensland, known there as Queensland Lily, is described as being larger than the former, producing leaves up to nine feet long, flowers a rich crimson, to four inches long, and yielding a good fibre from its leaves.

References to these several plants, in addition to those cited above, may be found as follows:

D. Palmeri, Curtis Botanical Magazine, t. 6665, 1883: detailed description, references to other works, double page illustration.

D. Palmeri. Desert. 1931. Cover illustration and reference, p. 8.

D. Palmeri, Gardeners' Chronicle. NS Vol. I, Feb. 7, 1874, p. 181, figs. 44, 45.

D. excelsa, var. *Guilfoylei, Gardeners' Chronicle,* Vol. XLV. Part I, June 12, 1909, p. 384, fig. 168, showing an inflorescence more like that of *D. Palmeri* than of *D. excelsa.* Leaves in this illustration—i.e. fig. 168,—also appear to be slightly ribbed, although the description does not mention the fact.

Kigelia pinnata (The Sausage Tree). Original Scratchboard by Alfred C. Hottes. The Summer issue 1954 of *Lasca Leaves* (p. 51) featured a brief paper, "Notable Trees in Southern California I. The Sausage Tree (*Kigelia pinnata*)," by Mildred Mathias. Mr. Hottes's Scratchboard Sketch is an especially worthy postscript to that paper.

CAL-POLY
Practical contributions to horticulture

HOWARD S. BROWN

THE W. K. KELLOGG ranch at Pomona with its famous Arabian horses and enjoyable Sunday horse shows is known to Southern Californians and many others throughout the country. Visitors are frequently surprised to learn this is a college campus, one of the three comprising California State Polytechnic College. The Kellogg ranch was a gift to the college from the W. K. Kellogg Foundation in 1949. Approximately one air-mile away, near the town of San Dimas, is one of the most beautiful college campuses in the country. Home-like dormitories surrounded by spacious lawns give this campus a "country club" atmosphere. The C. B. Voorhis family of Pasadena presented this campus to the college in 1938. The first campus was established at San Luis Obispo in 1901.

The Kellogg-Voorhis unit offers instruction in ornamental horticulture, fruit production, general crops production, horticultural services and inspection, soil science, and animal husbandry. The purpose of the college is to prepare students for specific jobs within their realm of interest. The curriculum developed to attain this objective is somewhat unconventional, and has been called "upside down." In essence it allows students to take "doing" courses as freshmen, continuing them throughout the college career, and spreads theory and related courses through the four year program, concentrating more of them in the later years. Ample instruction in the practical phases of the student's field are given during the first two years with the more advanced general courses being given in the later years, when he is better prepared to appreciate their relationship to his major. Since a great many students leave college before graduation, the importance of this system is evident. At whatever level the student leaves Cal-Poly, he carries with him skills that will enable him better to earn his living. Of course, the further he goes the better prepared he will be. If he completes the four-year program, completing all requirements set forth by the State Department of Education, the Bachelor of Science Degree is awarded.

The requirements of the job determine the educational experiences offered. "Learn by Doing" instruction is stressed. Students practice in the orchards, greenhouses, laboratories and fields the techniques they have learned in the class room. Closely associated with "learn by doing" instruction is the project method of teaching in which Cal-Poly has pioneered. The project system consists of self-owned or managerial projects operated by the students and financed by the college foundation. After producing a flower or vegetable crop or managing one of the college's citrus groves, handling the sales, keeping records of costs and determining profit, a student has gained knowledge of the problems he will face in the future. This combination of "learn by doing" and "earn while learning" philosophies not only enables the student to earn while doing work directly related to his major academic interest, but also creates an added incentive for more rapid acquisition of further skills and knowledge to the end that the project will be more profitable. Earning is not limited to the project system alone, but extends to all possible campus jobs, gardening, maintenance, farming, etc., enabling the student to work his way through college. After college the student starts work on a job with the confidence that comes from experience and "know how."

The objectives of the Ornamental Horticultural Department are: to train men in the various skills and techniques for positions in the growing, wholesaling and retailing phases of the nursery business and in the cut flower industry; maintenance

gardening; park and estate management; landscape design and landscape contracting. Two lath houses, three glasshouses, propagation house, design laboratory, a two-acre nursery, one and one-half acres of cut flowers and an extensive collection of plant material on both the Kellogg and Voorhis campuses are at the student's disposal. Students are given instruction and training in all phases of nursery work including planting, propagation, potting, transplanting, balling and pest and disease control. Practical experience and instruction on maintenance gardening is given by demonstrations and work on the two campuses. Each year specific areas of the campus are selected for landscape projects. The students carry the project from beginning to end: survey the site, draw the plans, make planting lists, and doing the actual construction and planting of the project. Flowers grown in the commercial flower growing class are used to decorate the college's float in the Pasadena Rose Parade. The department exhibits in the Los Angeles County Fair, in the various flower shows, and maintains a test garden of several hundred Camellias for the Pomona Valley Camellia Society.

Because of the tremendous value to the fruit industry in California there is constant demand for the services of well-trained men in its various activities. The fruit production department prepares students to meet these needs. The sixty-five acres of citrus, twenty acres of avocados and five acres of deciduous fruits are handled entirely by the students. Besides the techniques and skills of grove operation, the students are instructed in land preparation, propagation, top working, cultivation, fertilization, irrigation, harvesting and pest and disease control. They are placed in packing houses to learn all

Photograph courtesy of Howard S. Brown, Claremont, Calif.

Campus of the California State Polytechnic College, in the foothills of the Sierra Madre Mountain Range.

phases of this operation and they take trips to commercial groves, production plants, and experiment stations. Many pieces of farm equipment are available for student use, including various tractors, cultivators, spray rigs, wind machines, heaters and irrigation systems.

Students in the general crops production department have two hundred acres of crop land and the necessary equipment to produce both field and vegetable crops at their disposal. Instruction in all phases of crop production are given and field trips to neighboring farms and experiment stations are taken to widen the student's knowledge.

The college's equipment and plantings plus its close proximity to the Los Angeles fruit, vegetable and flower markets are excellent for instruction in horticultural services and inspection. This department prepares students for civil service positions such as agricultural or plant quarantine inspectors with the county, state and federal agencies; sales service representatives of agricultural chemical and crop marketing industries; and work in structural and agricultural pest control operations.

The soil science department provides training for all the students at the college and prepares majors in soils for occupations in that field. The students gain a working knowledge of soils through actual experience and training in soil mapping, soil analysis, fertilizer studies and conservation practices. All students majoring in soils are required to take broad training in other majors so they will have the background to apply their knowledge to the problems that confront the horticulturist and farmer.

Animal husbandry has recently been added to the curriculum, and as the college expands, majors in engineering, business administration, poultry, dairy husbandry, and home economics are contemplated.

In addition to work in the major field, background courses in the biological, physical, and social sciences round out the academic program. A complete athletic program in both major and minor sports and an intramural program is offered. Social activities such as dances, club dinners, group picnics, and dormitory get-to-gethers offer relaxation and fellowship. Each year in April or May Cal-Poly opens its doors for the purpose of viewing an exhibition of the college's activities. This is completely in the hands of the students.

Cal-Poly has made its contribution to California horticulture in the form of young men trained to perform their jobs well. As the college grows it will continue to do this on an ever-increasing scale.

[In order that men may learn to be satisfied] . . . "it is necessary fully to understand the art of joy and a humble life . . . the life of domestic affection and domestic peace, full of sensitiveness to all elements of costless and kind pleasure; therefore chiefly to the loveliness of the natural world. We shall find that the love of nature, wherever it has existed, has been a faithful and sacred element of feeling . . ."

JOHN RUSKIN
"Frondes Agrestes"

LOS ANGELES BEAUTIFUL

MRS. VALLEY M. KNUDSON

As LOS ANGELES grows, shall it become a less attractive place in which to live and work? As the city's industry increases, shall its appeal to visitors decrease? As our vast network of highways extend, shall they represent merely more miles of littered roadside, more unsightly shacks, assorted signs and abandoned-car dumps?

Or shall this "land of the angels" become an ever more beautiful area of unblemished highways, park-like boulevards, clean streets, restricted, well-maintained advertising, and smartly maintained commercial establishments?

Los Angeles Beautiful calls upon every citizen to help find the best answers to these questions.

Los Angeles Beautiful, founded in 1949 at the request of the Los Angeles Chamber of Commerce, provides a clearing house and workshop for everyone interested in making Los Angeles more attractive. Its Advisory Board is made up of representatives from business, industry, women's and men's organizations. More than one-hundred and fifty organizations are affiliated with Los Angeles Beautiful. Its Executive Committee consists of men and women in business, industry, government and organized groups.

Los Angeles Beautiful plans and develops numerous city-wide programs, mobilizing the forces of public-spirited citizens to build the beautiful Los Angeles of their dreams. It has special legislative committees that work with civic groups and with public officials on such problems as rubbish disposal, regulation of billboards on our new freeways, smog abatement, and rehabilitation of sub-standard housing.

Other Los Angeles Beautiful committees spearhead programs to interest owners and occupants of housing units to beautify and maintain their premises, to alert citizens to keep the streets clean by utilizing public trash containers and discourage the throwing of rubbish from moving vehicles. Still another committee concerns itself with the cleaning up of vacant lots, the removal of unsightly debris and urges good housekeeping habits in our city streets, parks and all public places.

A Los Angeles Beautiful long-range program for a street tree maintenance and planting program has already brought startling results and promise of glorious returns to come, such as the great lane of giant coral trees, extending from Sawtelle to the sea, planted by the Brentwood-San Vicente Business Association. We urge the citizens to plant flowering trees and shrubs. Thirty thousand school children participate in the annual planting contest sponsored by Los Angeles Beautiful. Annual exhibits at the California International Flower Show are attracting an ever-widening circle of home-owner interest.

Los Angeles Beautiful cooperates with the Municipal Art Commission in arranging "Know Your City" Week, to arouse in established residents and newcomers alike new interest and civic pride. It conducts an annual "Industry Can be Beautiful" contest, which encourages all types of commercial and public buildings to beautify their surroundings. It recently conducted a contest to select the official city flower; Bird of Paradise (*Strelitzia Reginae*) was chosen.

A year-round program of civic observances has been set up, with each month's project sponsored by one of the affiliated organizations. Every year Arbor Day is observed by tree planting ceremonies and we sponsor "Plant a Tree Week." The month of October has been set aside by the Board of Supervisors as "Los Angeles Beautiful" month, and the annual birthday observance of the city has become a regular civic event.

A special committee to coordinate Civic Services is working for a charter amendment that will integrate the efforts of all city departments along city beautification lines.

Los Angeles Beautiful needs the active interest and help of every resident of the city and county. There are no limits to membership, no dues, no assessments or formalities in joining. Every civic, business, professional and individual organization, every church and youth group, every women's club is invited to become affiliated, and from time to time will be notified as to how it can assist with specific projects.

The work of Los Angeles Beautiful has just begun. It will continue and grow as our city grows and develops, and to seek ways to draw to its program the civic efforts of all residents and of all groups and organizations who share our vision of tomorrow's Los Angeles Beautiful.

GROWING NOTES

GEORGE H. SPALDING

A germination report on seed of various rare or little grown species of plants appeared in this column in 1951. (*Lasca Leaves* Vol. 1, No. 3, p. 24.) The following list is presented as a continuation of the first report and the species listed do not duplicate the previous list. The germinating medium used was the same. All Acacia seed are always treated with boiling water.

NAME	TIME—DAYS
Abies mariesii	7-16
Abroma augusta	10
x Abutilon	
'Golden Fleece'	12
Abutilon auratum	9
hirsutum	30
x, milleri	12
palmeri	3-5
reginellii	4
vitifolium	12
Acacia alata	5
alpina	27
armata	35
aroma	4
bonariensis	43
brachystachya	9
caesia	5
caffra	4
calamifolia	6
cavenia	10-21
crassiuscula	5-8
cultriformis	10
cyanophylla	16
decurrens	6
dentifera	6
discolor	12
dunnii	26
elata	8-12
ephedroides	7
excelsa	13
giraffae	27

NAME	TIME—DAYS
Acacia—continued	
gladiformis	4-6
glandulicarpa	33-54
glaucoptera	12
gnidium	13
gracillifolia	11
heteroclita	10-19
homalophylla	5
howittii	6-31
iteaphylla	5
jonesii	7
kempeana	6
koa	9
latifolia	6-12
longifolia	10-45
melanoxylon	15
myrtifolia	12-15
obtusata	20
penninervis	18
podalyriaefolia	6-15
pravissima	7
pulchella	10
raddiana	5-7
rigens	14
rubida	8
saligna	5
scorpioides	6
spinescens	9
spirocarpa	4-5
steedmanii	9
stenophylla	13

NAME	TIME—DAYS
Acacia—continued	
suaveolens	9
subporosa	7
trineura	6
triptera	6
Acanthostachys strobilacea	16
Acer davidii	81
negundo	4-18
Acidanthera murielae	17
Acroclinium roseum	4
Adansonia digitata	10
Adenanthera pavonia	16
Adenium Boehmianum	7-9
Adenocarpus complicatus	6
Adonidia merrillii	101
Aesculus pavia humilis	30
Agapanthus longispathus	23
A. orientalis	16-30
pendulus	30
umbellatus var. *mooreanus*	17
weillighii	22
Agathis robusta	186
Agati grandiflora	4
Agave striata	10
victoriae	16
Agonis flexuosa	37
Alangium chinense	15
Alberta magna	29-37
Albizzia julibrissin var. *rosea*	7-9
lebbekoides	10
stipulata	13-16
Alectryon subcinereum	21

NAME	TIME—DAYS
Aleurites triloba	48
Allium fistulosum	8
flavum	10
odorum	13
unifolium	4
Alnus japonica	7-13
Aloe andringitrensis	13
arborescens	9
broomii	37
candelabrum	16
castanea	8
cryptopoda	7
davyana	9
eckliensis	13-14
fosteri	11
globuligemma	10
longibracteata	7
marlothii	6-12
mundenensis	8
petricola	7
pretoriensis	7
pruinosa	13
recurviflora	8
reitzii	7
rubrolutea	9-11
sessiliflora	7-12
Wickensii	7
Alonsoa warscewiczii	8
Alstroemeria violacea	12-16
Althaea armeniaca	5
cannabina	6
hohenackeri	10
Kragujevacensis	5
rosea	6
taurinensis	15
Alyxia daphoides	38

COVER PICTURE

Magnolia macrophylla, indigenous to southeastern United States. It forms a tree 30-50 ft. in height, with spreading branches; is sometimes referred to as the "Large-leaved Cucumber Tree." Leaves are from 1 to 3 ft. in length by about 6 in. broad, light green above, glaucous on the underside. Flowers are slightly fragrant, somewhat cup-shaped, and often up to 12 in. in diameter; white petals with a purplish cast toward the center. *M. grandiflora* flowers are recorded as about 7-8 in. across; those of *M. macrophylla* are inclined to be larger by 3-4 in. The flower photographed is the first on a small plant at Huntington Botanical Gardens. Illustrated in *Curtis Botanical Magazine* t. 2189: described, also, in *Gardeners' Chronicle*. III. 28: 324.

"Science, indeed, has discovered so many new facts about life and the world it inhabits that information and true enlightenment are apt to be confused. To name a phenomenon, to describe it, perhaps in the end to despise it, is not necessarily to understand it. The lens that discloses a fact rarely reveals its meaning."

JOHN HODGDON BRADLEY
"Patterns of Survival"

CALENDAR

Herb Society of America. Southern California Unit: regular meetings on the *1st Monday of each month*, at the home of members. October meeting to be devoted to the use of herbs in Christmas preparations. For detailed information, telephone Mrs. Arthur D. Richardson, President, SYcamore 7-9670, or Mrs. Floyd Betts, SYcamore 7-7966, or from Los Angeles phones, Dr. Etta Gray, HOllywood 3-8571. *Special meeting:* Wednesday, Nov. 10th, at Plummer Park, 7377 Santa Monica Blvd., (about half way between La Brea and Fairfax), 1-5 p.m., an Herb Cooking School, demonstrating use of herbs in the kitchen, including the making of herb vinegars, herb teas and tisanes, green salads, pot pourri for the linen closet, etc.

Los Angeles Branch of the American Begonia Society: recently organized, meets on the *4th Wednesday of each month*, convening at 11:30 a.m. with a pot-luck luncheon, at American Legion Hall, 3755 Sawtelle Blvd. (just off Venice Blvd.). For further information, see the September issue of *The Begonian*, p. 205, or telephone Mrs. Della MacLanaham, President, VErmont 8-7654.

Southern California Camellia Society: note should be taken of the change in time and place of meeting. Regular meetings will be held on the *2nd Tuesday of each month*, at the San Marino Women's Club House, 1800 Huntington Drive, San Marino. Ample parking is provided on property adjoining the school premises directly to the west. The first meeting of the winter season is scheduled for November 9th, program planned by Edwards Metcalf, Program Chairman, to include a talk on "Camellias on Four Continents" by Stanley Miller, who with his wife has returned recently from a foreign trip; and a talk on *casanqua* species by the Vern McCaskills. Both talks are to be illustrated with colored slides. A feature of the evening will be the presentation of both Hertrich awards. The usual display of choice blooms will be enjoyed by those who come early between 7:30 and 8:00 p.m., when the meeting opens.

Southern California Horticultural Institute: change of time and place of meeting should be noted. Beginning with the August meeting, regular meetings will be held on the *2nd Thursday of each month*, at Plummer Park, 7377 Santa Monica Blvd., in Fiesta Hall of the Community Bldg. Ample parking is provided within the grounds. Plant displays are opened at 7:30; meeting starts at 8 p.m. The October meeting is scheduled as a bulb forum under the direction of Mrs. Maria Wilkes, Thursday, Oct. 14. Programs for the ensuing year are under the direction of Dr. Mildred Mathias, University of California, Dept. of Botany.

Plant Societies: Please make note that this Calendar column is designed to accommodate horticultural and botanical plant societies, as well as our general readers, by listing data concerning place and date of meeting, program subject, and other pertinent subject matter, within the quarterly period covered by issue of *Lasca Leaves*, January 1st, April 1st, July 1st, and October 1st. Press dates (when typed copy should be in the hands of the Editor) are the first of each month preceding the date of issue. Data required: official name of the organization, date and place of meeting, (subject announcement optional), the name, address, and telephone, of the person responsible for release of copy for publication. Send to: Plant Societies' Editor, Box 688, California Arboretum Foundation, Inc., Arcadia, Calif.

NAMES, NOTES AND NEWS

Helmut Paulo Krug, Servico, São Paulo, Brasil, visited the Arboretum during August 1954. Dr. Krug is in charge of Plant Introductions for the State of São Paulo, Brasil. He has been in this country to work under the Point Four program of the United States Government. Included in his working program was a several-week's period at the Armstrong Nursery in Ontario, Calif.

Russell J. Seibert made an extended trip through some of the Eastern states this summer, including in his itinerary the Missouri Botanical Garden, St. Louis, Mo., the Plant Introduction Section of the U. S. Department of Agriculture, Beltsville, Md., the Plant Introduction Gardens, Glenn Dale, Md., the Division of Plant Exploration and Introduction, U.S.D.A., Savannah, Ga., and Coconut Grove, Fla. He also visited several of the display gardens, in South Carolina, Florida, Georgia, and Alabama.

Descanso Gardens are now part of the Parks and Recreation Department of Los Angeles County and are open to the public every day of the year from 10:00 a.m. until 4:00 p.m. A program of expansion and improvement is under way, and we believe that those who have been here in the past will be delighted with the improvements taking place, while others who have never visited the Gardens will find it a rewarding experience.

This year, for the first time, we have set aside a specific area for the use of garden and club groups of from 25 to 100. There are facilities for making tea or coffee and you are welcome to bring picnic lunches. Or, if desired, arrangements may be made for a catering service.

We feel that this will be added attraction for the many groups who are interested in horticulture, since they will now be able to combine a tour of the Gardens with a regular club meeting. The admission will continue to be 50c per person, with no charge for the use of the meeting place. If you like, the services of a guide will be provided; otherwise you may wander through the grounds independently. Reservations will be made in the order received.

From release by John L. Threlkeld, Acting Superintendent, Descanso Gardens, La Cañada, California.

NEW WILD FLOWER BOOKS

One of the common requests of visitors at the Santa Barbara Botanic Garden is for a book on western wildflowers, written at a popular level and illustrated with colored plates. That two major publishing houses should, within a few months of each other, release such a book for the eastern United States indicates that the need has been felt there as well as here. Publication of these volumes is definitely a contribution to the popular literature on wildflowers. Their beauty will appeal to all and their treatment of the plants is designed to give the reader an easy introduction to the methods of plant classification and an awareness of the characters which distinguish plants from each other.

Svenska Växter which is a popular but technically accurate book of Swedish wildflowers has sold 85,000 copies since its first printing in 1944. To hope that these two books will meet with a similar sale is probably too much to expect. It is sincerely hoped, however, that demand for them will be sufficiently great to warrant publication of a similar volume for the western states.

The Macmillan Wild Flower Book—Text by Clarence J. Hylander, illustrations by Edith Farrington Johnson. The Macmillan Co., 1954. xv plus 480 pp. including 232 colored plates, 4 figures of line drawings. 8¼″ x 10¾″. $15.00

This exceedingly handsome volume includes reproductions and descriptions of 500 flowering plants of the United States from "the east coast to the Rocky Mountains, and often beyond, and from Florida to southern Canada." Clarence Hylander has had many years of experience in popular writing on botanical subjects and his descriptions of the plants are both charming and informative. Details of structure are included as well as interesting bits of natural history. The plant descriptions are arranged according to families and a paragraph on each family is also included. An introductory discussion presents the methods used in plant classification, the use of botanical names, and the features of plants which are used in classifying them. Line drawings illustrate leaf characters and flower structure. A key to the flower families in the book should be of help to the beginning plant student.

The beautiful illustrations which show clearly the outstanding characters of each plant were checked for botanical accuracy by Dr. H. A. Gleason, Curator Emeritus of the New York Botanic Garden, who also helped select the species to be painted. The artist has combined beauty of design with botanical detail to a high degree and the many hours of work put into the paintings show clearly in the results. The lithographic reproduction is excellent, making every plate a pleasure to study. The arrangement of the plates would have been improved by grouping all species in one genus together as has been done for the text descriptions.

Most of the plants represented are from the east and midwest, only a few reaching across the Rocky Mountains to the Pacific Region. Westerners will still value the book, however, both for the high quality of printing and for the excellent representation of the familiar flowers of this country which are known to all of us either through memory or from their frequent mention in literature.

Wild Flowers of America—Illustrations by Mary Vaux Walcott and Dorothy Falcon Platt, text by H. W. Rickett. Crown Publishers, Inc., 1953. 71 pp. 400 colored plates. 8½″ x 12″. $10.00

The portfolio set of Mary Vaux Walcott's superb paintings of American wild flowers which was published by the Smithsonian Institution was so beautifully and so expensively reproduced that it is beyond the reach of the average individual. This publication of the paintings from that set in one volume is therefore to be highly commended. The original paintings were done by Mrs. Wolcott on numerous trips with her geologist husband to all parts of the United States, and include some of the most common wild flowers loved by everyone as well as some of the beautiful species seldom seen because of their rarity. Approximately one-fourth of the plates represent species found on the Pacific Coast while about one-fifth occur in California. Twenty of the original 400 plates have been replaced in this volume by excellent paintings by Dorothy Falcon Platt. It is unfortunate that some of the beauty of the original paintings has been lost through blurred reproduction and slightly dulled colors. They are still attractive, however, and should have great appeal.

The value of the plates is enhanced by the editing and text of H. W. Rickett who has spent a lifetime of study on American wild flowers. The plates have been rearranged from their original random order into a systematic arrangement according to plant families, while the descriptive text includes a brief characterization of the families as well as a short account of each species included. The descriptions supplement the illustrations and are intended, according to the introduction, "to call attention to the principal features which distinguish a species from its relatives." Geographic range is given for each plant.

The introduction explains to the layman the reason for botanical names, the principles of plant classification, and the structure of a flower. A short glossary of technical terms and a ready identification chart for the species in the volume are included.

* * *

Correction: In the article, "Cistus and Its Response to Fire," appearing in *Lasca Leaves*, Summer 1954, Vol. IV, No. 3, *Cistus purpureus* should read "hybrid of *C. ladaniferus* X *C. villosus*." The authors of the article wish to thank Mr. B. O. Milligan for bringing this correction to their notice.

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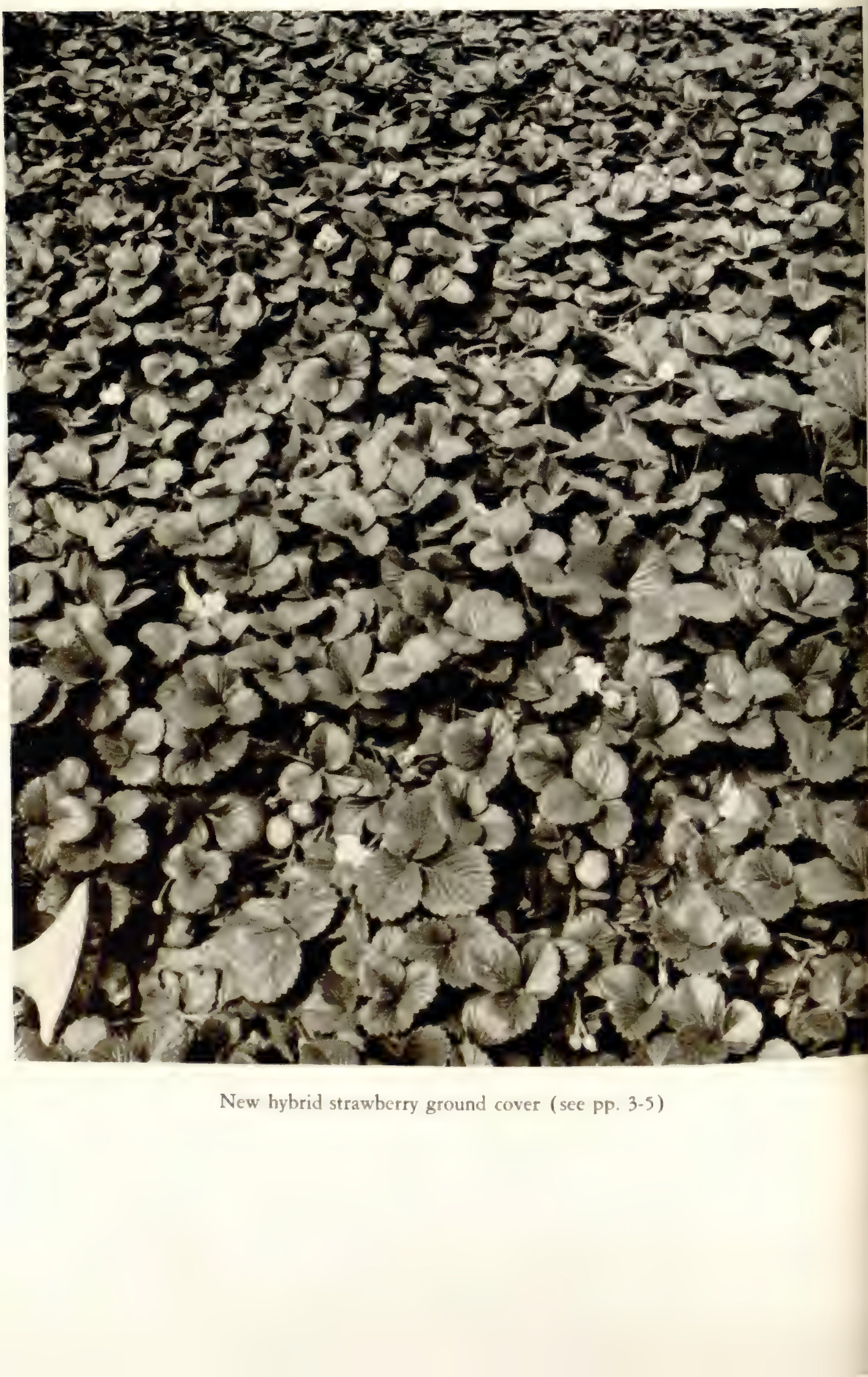

New hybrid strawberry ground cover (see pp. 3-5)

A NEW HYBRID STRAWBERRY GROUND COVER FOR SOUTHERN CALIFORNIA

LEE W. LENZ

Geneticist, Rancho Santa Ana Botanic Garden, Claremont, California

THE APPEARANCE of a new plant suitable for use as a ground cover in Southern California is always a matter of interest to gardeners. In this new hybrid there are two reasons for interest, since not only does it serve as a ground cover, but it also produces dessert fruit for the family.

The use of strawberry as a ground cover is not new, and one of the parents of this hybrid is the familiar Beach Strawberry (*Fragaria chiloensis*), a plant which has been grown by Californians for many years. Indeed we have no record of when it was first used as an ornamental. *Fragaria chiloensis* itself is a most interesting species not only from the botanical viewpoint but because of the role it has played in the development of the commercial strawberry cultivated so extensively today.

In nature *Fragaria chiloensis* is found from Alaska south to near Oso Flaco in San Luis Obispo County, California, and it occurs again along the western coast of South America. It is usually found growing in sand or sandy soil along coastal bluffs and on sand dunes on the ocean shore. In Alaska it is reported as occurring in sand and gravel along the old beach line just above the reach of high water. The hardiness and vigor of this species was noted by Albert F. Etter, a pioneer strawberry breeder and native of the town of Ettersburg in Mendocino County, who wrote that "of all fruit bearing plants this strawberry is one of the hardiest, being able to fight for existence among the rough grasses and weeds, battling harsh exposure to gales and even salt spray from the breakers."

One of the first written records we have of this plant is that of Garcilaso de la Vega who wrote in his "Comentarios Reales" (part one, Lisbon, 1609; part two, Cordoba, 1617) that "another fruit which they call 'chili' was brought to Cuzco in 1557." Further on he says, "It is of a very good flavor and much used for presents. It is borne upon a low plant, almost trailing on the ground; it has little grains outside like the fruit of the Madroño (Arbutus) and is the same size, not round, but rather long, in the shape of a heart."[1]

Father Velasco writing in 1789 called it *frutilla* or *freza quitense* (Quito Strawberry) and said that the fruit was two to three times the size of the European strawberry. He also added, "It is produced throughout the entire year and although it is common in several provinces, in no other is it so abundant, nor so excellent, as in that of Ambato."[1]

The town of Ambato, Ecuador, lies at an altitude of about 9500 feet and is characterized by having a dry, cool and equitable climate with sandy soil of volcanic origin. Recently Dr. George M. Darrow of the United States Department of Agriculture visited this area and found that the strawberries were still being grown there in a few immense fields which, so far as he could learn, had not been replanted in from 200 to 400 years. Darrow describes the fields saying that the plants are not grown in rows but are spaced so that there is about one plant per square foot of soil space. The fields are not irrigated and the berries are picked about once a week throughout the year.

It might be added here that plants grown at the Rancho Santa Ana Botanic Garden from seed collected at Ambato have done very poorly and seem to be especially susceptible to mildew.

The introduction of *Fragaria chiloensis* into Europe came about through the efforts of a French officer by the name of

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[1]Quoted by Wilson Popenoe in "The Frutilla, or Chilean Strawberry," Jour. Hered. 12: 457-466, 1921.

Frezier who visited Chile in 1712. Frezier spent some time at Concepcion where he became familiar with the local strawberry and when he returned home he took plants with him. According to his account fresh water was scarce aboard ship but the Captain was generous and gave him enough to keep the plants alive. When they arrived in Marseilles several months later there were still five plants living. Of these the Captain took two and Frezier kept three. On his arrival in Paris, Frezier says that he gave one of them to his friend, the famed botanist, Antoine Jussieu, to be planted in the Royal Garden. One of the plants went to the minister of fortifications, and the third he kept. Frezier later published, in his "Relation du Voyage a la Mer du Sur," 1717, a drawing of the plant and its fruit with the title *Fragaria chiliensis, fructu maximo, foliis carnosis, hirsutis, vulgo frutillo.* Duchesne, who monographed the strawberries in 1766 changed the name to *Fragaria chiloensis.* The island of Chiloe which lies off the coast of Chile is one of the regions in which the large-fruited form occurs as an indigenous species, and the assumption would be that the specific name *chiloensis* was formed from that of the island; yet Duchesne says nothing to this effect, and the fact that Frezier in his earlier work, uses the name *chiliensis* shows that he, at least, desired to name it after the country, Chile, instead of for the island. Today most authorities use the name *chiloensis.* Duchesne's name is commemorated in another ground cover, *Duchesnea indica,* the so-called false strawberry.

The common eastern strawberry (*Fragaria virginica*) had already been introduced into Europe, and from the cross between the two species has arisen all of the familiar garden strawberries that we know today.

The Beach Strawberry is an extremely variable species and plants from different localities may be quite different in character such as leaf size, color, texture, etc. There are also differences in fruit and flower characters and, according to Etter, fruit from plants growing at Cape Mendocino was pink while the fruit from plants at Pt. Arena was almost red and the berries were soft and fragile.

One of the most significant differences between the California plants and some of the South American forms is that in California the flowers are all unisexual with male and female parts being borne on separate plants while at least certain of the South American forms have perfect flowers, i.e. with both stamens and pistils in the same flower. One of the reasons, therefore, why berries are seldom seen on the Beach Strawberry plants growing in cultivation is that the plants are usually all of one sex.

When in the fall of 1948 the strawberry breeding program was initiated at the Rancho Santa Ana Botanic Garden, then located in Orange County, one of the objectives was to produce perfect flowered plants which would produce fruit as well as serve as a ground cover. At that time a number of strains of *Fragaria chiloensis* collected from various parts of California were brought together in the experimental field along with some of the better varieties of the garden strawberry. Numerous crosses were made in the spring of 1949 and a large number of hybrid seedlings were grown. As the plants grew they were carefully observed for vigor, disease resistance, and good leaf form and color. When the plants bloomed they were checked to determine which produced flowers with both stamens and pistils and therefore would produce berries without having to be interplanted. Finally one hundred of the most promising plants were selected for further trial at the Botanic Garden which had been moved in the meantime to Claremont, California. These one hundred plants were allowed to produce runners until each had formed a large circular bed of plants. After that the excess runners were chopped off. Again the plants were scored for leaf characters, vigor and winter hardiness and finally for fruit characters. Two plants were selected for final trials. Of the two plants No. 25 was finally chosen and propagules were then given to a number of interested gardeners living in various

parts of Southern California for local testing. During the next two years the behaviour of the plants was checked periodically.

"Hybrid Ornamental Strawberry No. 25," the name by which this clone is known, is believed to be a ground cover which is superior to the Beach Strawberry by being more vigorous, larger in all its parts, and in addition produces dessert quality fruit for the home. The selected name at first appears to be unnecessarily long, but it was chosen only after careful deliberation. In the first place this hybrid is not to be confused in any way with the commercial type strawberry. The fruit, while perhaps more flavorful than many commercial varieties, has several characteristics which make it unsuitable for commercial use. The berries tend to be soft and rather fragile so that they could not be packed or shipped and they also tend to be pale in color. Another characteristic of the variety is that they reach their flavor peak before they attain their full color and should therefore be picked while they still appear to be somewhat green. Concerning flavor it is interesting to note that Etter many years ago said that the "most exquisite flavors the strawberry will ever know will be derived from the various forms of the *chiloensis* species."[2]

This hybrid appears to be quite adaptable to various soils in Southern California and can probably be grown in any soil suitable for general gardening, although they are probably at their best in sandy loam. In hot inland areas this hybrid does best in semishade. The plants require watering about every week or ten days during the summer to keep them at their prime. During late fall or winter some of the leaves may become brown and discolored and this is then a good time to give them their yearly renovation. The leaves can be mowed off with a lawnmower if the blades are set high enough to avoid injuring the crown. The old leaves and excess runners are raked off and the plants fertilized and watered. Within a couple of weeks the area should be covered with a smooth even mat of fresh new leaves. In order to maintain fruit production, the plants should be thinned about every two years. So far the plants have not been troubled by diseases and the only insect pest that has been noted is an occasional attack of aphids in the early spring.

Editor's Note: Of prior interest to readers of *Lasca Leaves*, on the subject, *Fragaria chiloensis*, is the leading article appearing in Vol. III, No. 4, Autumn 1953, pp. 59-61, "White Flowering Native California Plants for Garden Use," by Katherine K. Muller, Director, Santa Barbara Botanic Garden, Santa Barbara, Calif. The cover picture of the same issue, described briefly on page 79, is a close-up of this useful ground cover.

[2]Quoted by Wilson Popenoe in "The Chilean Strawberry," Jour. Hered. 12: 457-466.

PLANT INTRODUCTIONS FOR 1954

PHILIP EDWARD CHANDLER

REVIVAL of some things old, several items new, one good low shrub borrowed . . . thus might one paraphrase the "introductions" in this year's nursery trade. All are new as far as the nursery-going public is concerned. As to their best use in the landscape-scheme, only time will tell. The fact that they are now available is news, and we have ventured to suggest in the notes below some of the better known ornamentals with which these newcomers may be planted harmoniously.

Hibiscus tiliaceous, in one form or another, has been a collector's item, doubtless, for a generation or more in relatively frostless areas, but its appearance in numerous gardens dates from 1954. Common near the sea in tropical countries, it is not always regarded as an ornamental in such environment, because of its great size and aggressive qualities. In Hawaii, it is the "hau" where it is pictured as "an erect, gnarled, crooked tree of low or medium height [but] in other places, spreading horizontally over the ground in thickets, forming an apparently impenetrable network of trunks and branches."*

*Marie Neal: "Gardens of Hawaii."

Continued on page 11

Figure 1. Topographical map of the southern California coastal plain. Plant injury is a common occurrence in the darkly shaded area and often seen in the lightly shaded area. Damage is also viewed at various times in the unshaded area, westerly of the mountain ranges. The arrows indicate natural air outlets from air pollution basin.

AIR POLLUTION DAMAGE TO AGRICULTURAL CROPS

JOHN T. MIDDLETON, J. B. KENDRICK, JR., AND E. F. DARLEY
University of California, Riverside, California

AIR POLLUTION damage to agricultural crops has been recognized for some years. This type of damage is usually associated with a particular industrial process or specific source for the air-borne contaminant. Damage to the foliage of a variety of crops can be caused by exposure to sulphur dioxide, fluorides, chlorine, and ammonia. These chemicals usually cause a specific type of damage on certain crops, such that the air-borne chemical can be recognized by the symptom expression on the plant affected. Injuries of the kind suggested above have been reported from many places throughout the world. Damage to crop plants in the vicinity of Los Angeles were first found to be of importance in 1945. The symptoms of damage were different from those usually associated with recognized air pollutants. Not only were the symptoms different but the kinds of plants affected were usually different. This suggested that perhaps a new type of air-borne chemical was present that was responsible for the injury to crops grown in the Los Angeles area.

A survey conducted in 1944 and 1945 demonstrated that damage was first observed in the vicinity of Dominguez and North Long Beach, California. The principal crops affected were those not normally troubled by sulphur dioxide or fluoride contaminants. The expression of injury was also different. Vegetable crops such as celery, spinach, and lettuce showed a silvering and slight glazing of the lower leaf surface. Sometimes it was followed by a bronzed discoloration. Although the silvering and glazing of the lower leaf surface was often the only symptom, there were sometimes cases of leaf damage to the upper surface. It was discovered that damage to the upper leaf surface was always associated with water loss by the lower surface. These same types of symptoms have been found on a variety of other cultivated plants as well as weeds.[1] Using both weeds and crop plants as indicators, it has now been observed that this type of air pollution damage can be found from the Mexican border to Santa Barbara and inland in the vicinity of the San Gorgonio pass. The same type of damage has been observed since 1950 in the San Francisco bay area. Although damage to plants in the bay area is less extensive than in the Los Angeles area, it is now known to occur from San Rafael on the north to Gilroy on the south and eastward to Walnut Creek.[2] Further surveys may indicate a more extensive area to be affected.

The specific type of damage observed on particular crop plants was known to occur only during periods of reduced visibility and complaints of human distress. These periods are locally known as "smog periods." As a result of this some people refer to the damage of plants as "smog damage." Since the term "smog" is coined from the words smoke and fog, neither of which is responsible for damage, it is not proper to call the damage observed on plants "smog damage," but rather "air pollution damage." It was felt that, if the toxicants responsible for crop damage could be identified, perhaps some measures for abatement leading to relief from the air pollution problem in the Los Angeles area could be effected. As a result of this interest, several research agencies[3] initiated a program which resulted in the finding, reported by Haagen-Smit, etal.[4] that the toxicants in the air responsible for crop damage are oxidized hydrocarbons. Hydrocarbons come from the manufacture, handling and use of gasoline, i.e., refineries, service stations, storage tanks, and automobiles,—or, generally speaking, from refined petroleum products. The vapors of these hydrocarbons from both their manufacture and use escape into the

atmosphere and become oxidized. It is the oxidized hydrocarbons that are responsible for the silvering and glazing of specific crop plants. The hydrocarbons, principally unsaturates, cause no injury by themselves. They must be oxidized to give the damage factor.

Concentrations of oxidized hydrocarbons sufficient to cause injury to crop plants occur only during periods of aggravated air pollution. These periods are caused by the lowering of an inversion layer of air that confines the pollutants given off by normal industrial and community activity. The pollutants are confined below the inversion layer and due to the topography of the Los Angeles basin, must necessarily spread eastward and southward, since the mountain barriers prevent their escape into the adjoining desert regions. The air pollution period becomes more aggravated the longer the inversion layer remains low. When the inversion layer rises above the normal levels and permits the air to be broadly distributed, there is no longer important pollution present. A similar situation pertains in the San Francisco bay area. The periods of air pollution in San Francisco are of shorter duration and of lower concentration largely because the mountain areas are of lower elevation and the wind velocities higher. The same conditions for air pollution exist throughout the Pacific coast slope, but it is only in areas with large metropolitan populations and a topography that permits the pollutants to become trapped that crop damage occurs. Since the discovery, by the senior author, of air pollution damage caused by pollutants other than sulphur dioxide and fluorides, and the discovery later by Haagen-Smit, that the specific pollutants responsible for crop damage were oxidized hydrocarbons, the University of California, Riverside, has conducted a great deal of research attempting to discover how agricultural crops can be grown in an area receiving a polluted air mass. Our research studies are also concerned with knowing more about the chemical behavior of air pollutants in the atmosphere using plants as an assay method.

Observations on damage to crops by several writers have shown that there is a great variation in their relative susceptibility to injury by oxidized hydrocarbons. Our studies are still incomplete, particularly with regard to forage plants, flowers, and woody ornamentals, and tree crops. Weeds that are common to the area and that have been observed to be damaged are: annual Bluegrass, Cheese Weed, Chick Weed, Dwarf Nettle, Lambs Quarters, London Rocket, Quick Weed, and Wild Oats. There are more than 50 other weeds that could be enumerated but which may not have general distribution. The relative susceptibility of a variety of plants known to be damaged by the oxidized hydrocarbons is given in the table on page 9.

Some plants such as lettuce, tomato, and sugar beets fail to grow normally in the polluted air mass, and yet, show no visible injury symptoms.[5] Since all plants grown in the area are subject to this growth suppression, it is impossible to measure what effect this reduction in growth has upon plant vigor and yield. The effect of this growth suppression can be readily demonstrated by growing plants in a box, separated so that one group of plants receives normal polluted air, and another receives air that has been filtered through activated carbon. Within the short period of a week a growth difference can be observed in tomatoes under such an experimental design. Research is now current at Riverside to determine the effect of this growth suppression upon tree crops such as citrus and avocado.

Observations of crop damage in the field, particularly by J. Hurst, West Covina, revealed that plantings receiving adequate and regular water supplies through irrigation were more severely damaged than those not so well watered. The same differences have been reproduced experimentally under controlled fumigation and regulated water supply in cooperative experiments with S. J. Richards at Riverside. It is possible for a grower who has the option of withholding water during a short pollution period, to minimize crop damage by exercising

the option to delay irrigation until after the aggravated air pollution period has passed. Obviously if the period is of long duration, water cannot be withheld. Perhaps practical use can be made of this finding by relating irrigation schedule to forecasts of air pollution periods.

Kendrick and others[6] discovered that additions of nitrogen to the soil increase the susceptibility of plants to damage by the oxidized hydrocarbons. This reveals that efforts to produce a good crop provide the optimum opportunity for damage by the air pollutants.

Under controlled fumigation conditions it has been demonstrated that the amount of damage to a particular plant is directly related to the length of fumigation or exposure to a given concentration of the oxidized hydrocarbons. The longer the exposure the greater the damage, even at concentrations as low as 0.1 parts per million. These observations corroborate those made in the field which show that damage to crops is directly proportional to the length of the pollution period.

There is another additive feature and that is that the lower the inversion layer, the greater the damage. This increased damage is due to the fact that there is less total air to receive the pollutants which are responsible for plant damage. As the inversion layer, or lid, goes up, there is a greater air volume present to receive the pollutants, and therefore less total concentration per unit of air, yet the same amount of pollutant in the total mass. Air pollution is important in the Los Angeles basin because there are approximately 265 days a year in which the inversion layer is low enough to permit accumulation of toxicants which can cause plant damage and be annoying to humans as well as to reduce visibility. Were it not for the inversion layer, the mountain barriers, and the prevailing westerly breeze of low velocity, there probably would be no real air pollution problem in the Los Angeles area. There are other cities in the United States and in the world with as many people and more per square mile that do not yet have this particular problem. The uniqueness of the problem in Los Angeles and San Francisco is attributed to the inversion layer, the topography, the size of the metropolitan area, and the use of refined petroleum products.

Various methods for protecting plants against air pollution damage are being

Plants Known to Be Damaged by Olefinic Peroxides in Smog

Crops	Susceptible	Resistant
Tree		Grapefruit Lemon Orange
Field	Alfalfa Oat Sudan Sugar beet	Barley Blackeyed bean Mustard Black White Sweet clover Vetch Wheat
Vegetable	Bean—common Golden Cluster Pink Pinto Small white Bean—lima Fordhook 242 Beet Celery Endive Lettuce—Romaine Onion Parsley Parsnip Spinach Swiss chard Lucullus Turnip	Bean—common Bountiful Kentucky Wonder Bean—lima Concentrated Fordhook Westan Broccoli Cabbage Cauliflower Chinese cabbage Corn Eggplant Leek Lettuce—head Muskmelon Mustard Pea Pepper Potato Radish Rhubarb Swiss chard Large ribbed Tomato
Ornamental	Chrysanthemum (Some varieties) Grass Annual rye Perennial rye Larkspur Petunia Snapdragon	Calendula China aster Chrysanthemum (Most varieties) Dahlia Forget-me-not Gaillardia Grass Bermuda Kentucky blue Lobelia Pansy Stock Sweetpea Viola White clover

From a reprint from *California Agriculture* 7(11): 11, 12, 1953.

studied. Protection of susceptible plants against damage from the oxidized hydrocarbons can be afforded by the producer of glass-house grown plants, by introducing air into the glass-house through an activated carbon filter. If this circulation system is adequate, there will be a positive pressure maintained within the glass-house which will exclude the polluted air mass. The activated carbon filter is a highly effective method of removing the oxidation products of refined petroleum vapors. Naturally, this same type of carbon filter can be used in the home if the vapors are

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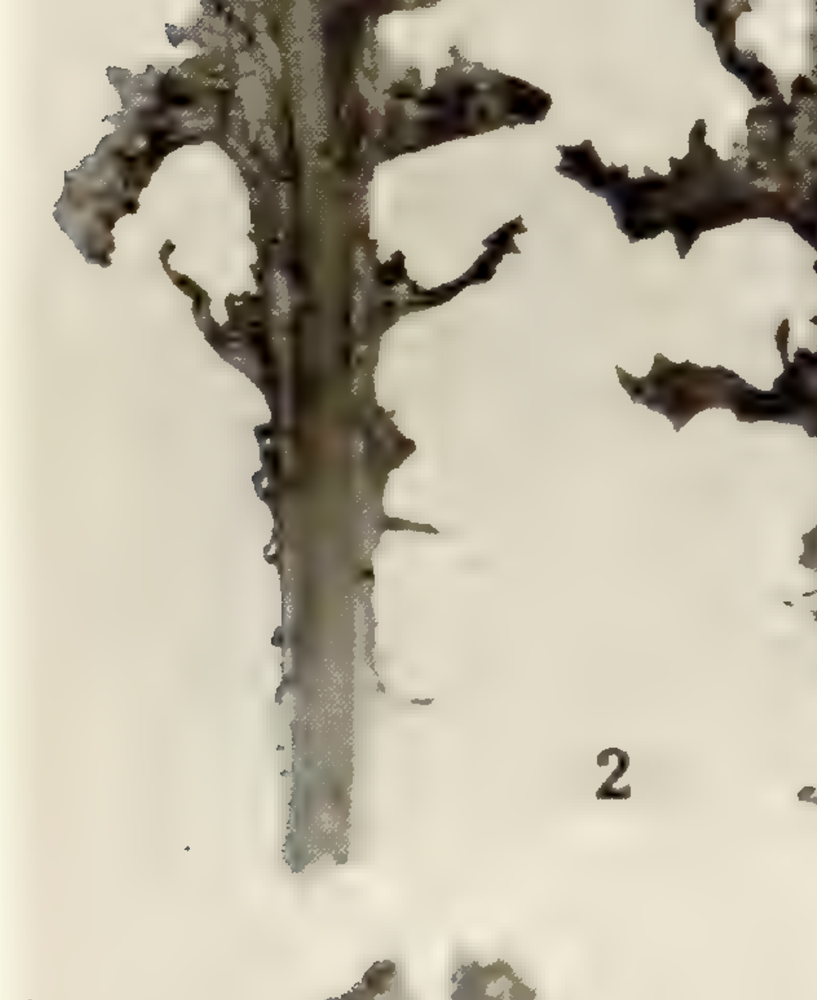

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Figure 2. Endive Lettuce. (Left) Type of damage observed on the upper leaf surface. (Right) That observed on the lower. Figure 3. Natural damage on celery caused by oxidized hydrocarbons. Figure 4. Natural air pollution damage on alfalfa. Figure 5. Damage to cheese weed. (Upper) Healthy leaf. (Lower) Naturally affected by oxidized hydrocarbons. Figure 6. Chenopodium. The upper two leaves showing silvering and glazing as found on the lower leaf surface. The lower leaf shows no damage on the upper leaf surface.

to be excluded for a private residence or even a public building. Protection can be afforded to plants grown in the field by the application of dithiocarbamates to the leaf surface. This class of material offers specific protection from damage by the oxidized hydrocarbons. Some dithiocarbamates are currently available on the market at moderate price. One that is commonly sold as a fungicide for the control of leaf blights is zinc ethylene bisdithiocarbamate. This same material is often referred to as zineb. Zineb is sold under a variety of trade names but can always be recognized by reading the list of active ingredients on the package. Research has not progressed sufficiently to indicate at this time just how often the dithiocarbamate should be applied to plant material sensitive to oxidized hydrocarbons, or in what quantity.

The abatement of hydrocarbon losses from the air mass is difficult to accomplish and time consuming because of the multitude of contributors. The effects of air pollution damage are real to the agriculturist and cause great economic loss. Damage to 11 agricultural crops in 1949 in the Los Angeles area alone was estimated at slightly less than ½ million dollars. Estimates based on surveys in 1953 indicate that losses will exceed three million dollars. This increase in loss is due not only to recognizing damage on a greater variety of plants but also due to increased community activity and industrial development. It is hoped that the results of the air pollution research activity at the University of California at Riverside will permit some identification of oxidized hydrocarbon injury to plants in other parts of the world, and some immediate relief to the producer of food, forage, and flower crops, grown in the Los Angeles and San Francisco areas.

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PLANT INTRODUCTIONS OF 1954

Continued from page 5

In California, it is neither aggressive nor of great size, but is an unusually arresting shrub of 6′-10′ across with rounded heart-shaped leaves which vary greatly in size from 2″-12″ in diameter, leathery, and with edges entire or scalloped, the upper sides rather smooth, varying in color from green through bronze to red, sometimes with conspicuous ribbing. In seasons of very cool nights, the foliage is even more brightly hued, though the plant is virtually evergreen unless damaged by frost of which it is definitely tolerant. This foliage color is the outstanding feature of *Hibiscus tiliaceous* in the Los Angeles area, one not observed on it in tropical climates. Flowers, 2″-3″ long, open as yellow cups, some with dark eyes; later in the day, they deepen to apricot or dull orange; by night, to dull red. The inflorescence is not profuse, nor is it conspicuous. Of rather easy culture, in fairly rich soil, it prefers a *warm* location, free of strong winds. The authority of the plum color of *Hibiscus tiliaceous* may be emphasized to advantage by a companion planting of *Echeveria metalica,* (perhaps as a ground cover), or *Phormium tenax,* variety Silver Bronze.

Continued in next issue

LOS ANGELES STATE and COUNTY ARBORETUM POLICY AFFECTING PUBLIC USE OF ARBORETUM GROUNDS

Effective January 9, 1955

ARBORETUM OFFICE (Temporary Headquarters):
291 N. Old Ranch Road, Arcadia, Calif. Telephone: DOuglas 7-3444. Office Hours: Monday through Friday (except legal holidays) 8:00 a.m. - 5:00 p.m.

PUBLIC ENTRANCE:
Public Entrance and Exit shall be at the designated pedestrian gate at 301 N. Baldwin Ave., on such days and hours as the Arboretum is open to the public.

PUBLIC PARKING:
Parking facilities are available between the west side of Baldwin Ave., and the Arboretum fence, accessible from the Forecourt at 301 N. Baldwin Ave., and from the Parking Lot Entrances at 401and 501 N. Baldwin Ave. Parking will only be permitted where white lines indicate parking stalls. Private cars or other vehicles will not be permitted within the Arboretum grounds.

HOURS AND DAYS OF OPENING:
The Arboretum shall be open to the General Public until further notice, without admission charge, on *SUNDAYS ONLY*, between the hours of 10:30 a.m. and 4:00 p.m.

ADMISSION TO ARBORETUM GROUNDS:
Everyone entering the grounds will be requested to fill out guest information card with name, address and special interest. Conducted tours will start from the main entrance at 10:30 a.m. and on each half hour thereafter. The last tour will be conduted at 4:00 p.m. All persons entering the Arboretum will be required to assemble for a scheduled tour.

PETS:
The Arboretum is a bird sanctuary, therefore, *NO DOGS OR OTHER ANIMAL* pets shall be permitted within the Arboretum grounds.

CHILDREN:
Children under 14 years of age must be continuously accompanied by responsible adults.

GENERAL CONDUCT OF THE PUBLIC:
The Arboretum is designed for the passive and educational recreation of the public. Shouting, running and otherwise boisterous conduct will be strictly prohibited.

LIQUOR:
No alcoholic beverage or other bottled or canned drinks will be permitted within the grounds.

PICNICS:
No picnicking or food in any form will be permitted on the grounds. Complete picnic facilities are available at the Arcadia County Park, 1½ miles east of the Arboretum.

PHOTOGRAPHS:
Amateur photography is permitted. All photography for commercial purposes will be prohibited except by prior arrangement through the Arboretum Director. Flash bulbs and other photographic refuse must be deposited in trash containers.

ARTISTS:
Art classes or individual artists may make pre-arrangements, during office hours, for appointments, time and location for painting. All artists using the Arboretum facilities will be responsible for keeping the area used clean and undamaged.

PICKING OF PLANTS AND FLOWERS:

Digging or picking of plants, flowers, leaves, branches, fruit and cuttings will be strictly prohibited. Under Arboretum supervision and with written permission from the Director, certain plant materials may be obtained for specific educational or scientific use.

PLANT LABELS AND SIGNS:

Labels are placed at various plants for the information of the public. They are not to be removed or mutilated.

SMOKING:

Smoking is to be prohibited in the jungle and otherwise confined to areas of low fire hazard.

CONTAINERS:

Shopping bags and other containers will not be permitted within the grounds.

TRASH:

Papers and trash are to be deposited in trash containers.

CONDUCTED TOURS FOR ORGANIZATIONS:

Arrangements for conducted sponsored group tours through the Arboretum may be made by calling the Arboretum Office DOuglas 7-3444 during the regular office hours. Group tours are available *Wednesday* through *Saturday* (except legal holidays) between the hours of 9:00 a.m. and 3:00 p.m.

GROUNDS PERMITS:

Arrangements for special grounds permits may be made by calling the Arboretum during office hours. The Arboretum shall reserve the right to issue grounds permits for qualified scientific and educational purposes only.

HANDICAPPED AND AGED:

Persons unable to walk through the grounds may pre-arrange for seeing the Arboretum by calling the Arboretum Office during regular office hours. DOuglas 7-3444.

The Los Angeles State and County Arboretum is a public institution devoted to the study, growth and display of plants, and as such we request your cooperation in helping us to make the Arboretum a place of beauty and of equal benefit for all to enjoy. We ask your indulgence in bearing with us during these years of development. Many years will yet be required to attain a state of maturity. Many facilities and plantings are still to be made. We invite you to return frequently to observe the Arboretum and its plants grow from infancy to adulthood.

RUSSELL J. SEIBERT — *Director*
Los Angeles County Department of
Arboreta and Botanic Gardens

CALENDAR

Southern California Horticultural Institute: regular meetings on the 2nd Thursday evening of each month, at Plummer Park, 7377 Santa Monica Blvd., Los Angeles, in Fiesta Hall of the Community Bldg. Ample parking within the grounds. Plant displays open at 7:30 p.m.; meeting starts at 8 p.m. The January meeting will be a panel forum under the direction of Philip Edward Chandler, member of *Lasca Leaves'* Editorial Board, and contributor to the current issue (see p. 5). A wide field of plant material will come under discussion, especially such as the amateur gardener may consider for planting through February and March in his home landscaping. Other capable members of the Institute besides Mr. Chandler will devote their time that evening to suggestions and the answering of questions. All members are invited to participate, bringing not only plant material for discussion, but also their own knotty problems to be ironed out by a panel of "information, please" experts.

Southern California Camellia Society: regular meetings on the 2nd Tuesday of each month; flower display open at 7:30 p.m.; meeting begins at 8 p.m.; meetings now held at San Marino Women's Club, 1800 Huntington Dr., San Marino, with ample parking on adjacent school grounds to the west. Jan. 11, speakers: Ralph Peer, Leo Davis.

Calendar Notes continued on p. 23

A TURFGRASS FROM "DOWN UNDER"

LOUIS B. MARTIN

Plant Physiologist, Los Angeles State and County Arboretum, Arcadia, California

Microlaena stipoides (R. Br.), a pasture and lawn grass, is a native of New Zealand and Australia. T. F. Cheeseman, in his *Manual of the New Zealand Flora,* describes it as, "a slender perennial, rhizome creeping, leaves rather short." F. Manson Bailey in *The Queensland Flora* calls it "Meadow Rice Grass." In the past year, research has been initiated with *Microlaena stipoides* to explore its possibilities as a turfgrass for So. California.

Seed from New Zealand was planted in Sept. '53; germination was excellent; the stand of grass was a deep, rich green. In May '54, vegetative material was transplanted to a permanent site. During the summer, individual plants increased in width and height and two seed crops were harvested.

Our observations of year old plants include the following: single plants are clumpy in habit, rather stiff in appearance but not harsh to the touch. Flowering stalks are from ten to fifteen inches tall. Several clumps of grass at the original seeding site survived the summer of '54, although no water was applied following the removal of the vegetative material.

Desirable qualities so far observed in *Microlaena stipoides* for use as a turfgrass are: 1) successful establishment from seed or vegetative material; 2) an appealing green color; 3) a good seed producer; 4) excellent growth in heavy soil; 5) maintained its color through one full year.

Future observations will include finding answers to the: 1) possibility of "brown-off" after frost; 2) resistance to disease and insect attack; 3) optimum cutting height; 4) turf appearance and quality after two to five years establishment.

The following is a report of the continuing research on Bermuda and Zoysia grasses and of certain grass combinations.

BERMUDA GRASSES: Everglades 1, 2, and 3 and U-3 (Hall's) Bermudas did not "brown-off" during the winter season of '53. This was probably due to the mild weather (average daytime temp. from Oct. '43 to March '54 was 76.8 deg. F.; average night temp. was 51.5 deg. F.). This year all plots, with the exception of Everglades 3, were scalped, aerified, and fertilized in Oct. Very warm weather and two light rains following this operation promoted rapid re-growth and at present the plots show excellent green color. Regardless of the weather, the above maintenance practice for Bermuda lawns in late summer or early fall appear advisable from our experience for two reasons: a) period of greenness extended late into the year, and b) removal of the under mat or thatch encourages earlier growth in the spring.

ZOYSIA GRASSES: Our plantings of *Zoysia japonica* and *Zoysia japonica "Meyer"* (Z-52), began to "brown-off" in October and at the present time have lost nearly all their color. The quality of the turf is excellent if one does not consider the color. We do not feel that either of these two grasses will have a place in So. California unless their period of greenness can be extended. *Zoysia matrella,* a fine textured grass, has closely paralleled the Bermudas this year in holding color late into the fall. A portion of each of our six selected strains of *Z. matrella* were given the same fall maintenance as the Bermudas; however, re-growth of the Zoysia has not been as rapid.

GRASS COMBINATIONS: One attempt to produce an all-year green lawn by combining a summer grass (Bermuda or Zoysia) with a winter grass (blue grasses) has not proven entirely successful. Everglades 2 and 3 and U-3 Bermudas plugged into a thick stand of Merion blue grass in the summer of '53, have all but eliminated the Merion. If the Bermudas and

Zoysia "brown-off" soon, the blue grass may respond to the reduced competition by a flush of growth.

No ground cover is as satisfactory as a green lawn. No one grass will make a lawn everywhere. There is, however, a "best" grass for every area. Turfgrass research is dedicated to finding this grass.

A single plant of *Microlaena stipoides* (R. Br.), and at the right, a sample of the long-awned seeds. Photography by Louis B. Martin.

BIRD NOTES

W. Dan Quattlebaum

It is a pleasure to report that the birds do not seem to mind the many and varied activities which are usual in the Arboretum. The herons, grebes and the rare Red-bellied Hawks are still there. Last fall there was also an unusually large number of Mourning Doves. A Killdeer made a nest on the lawn not far from the Office, incubated the eggs and brought off 3 young in the midst of much trucking, noise and sprinkling. Last October 3 Java Sparrows, exotic "escapes," came into the little marsh near the Office, and were feeding there for about 2 weeks. These pretty and conspicuous visitors caused much excitement among some of the office force, and many local Bird-watchers came to see them.

COVER PICTURE

Public entrance to Los Angeles State and County Arboretum as it appears at the time of its official opening to public visitors, announcement of which in detail is carried on page 22 of this issue, with supplementary policy notes on pages 12 and 13, and notes of special interest to botanists and horticulturists under NAMES, NOTES, and NEWS, page 23. The rather bleak aspect of this picture of the forecourt will be interesting to compare with a contemplated photograph of the same area a year or more from this date. Photograph by Louis B. Martin.

A SEEDSMAN LOOKS AT POLLINIZATION

HOWARD BODGER

El Monte, California

IN DEVELOPING NEW PLANTS better suited to the garden, or more productive of fruits or flowers, one of the plant breeder's most useful techniques is the "cross." It is a rather simple operation, but not more than accidentally useful unless the breeder possesses a considerable knowledge of genetics. The general public is quick to understand the aims and possible results of a technique, however, without much knowledge of the science behind it. Such common jokes as the "cross between a homing-pigeon and a parrot which could deliver verbal message" show that the general idea is well understood by most persons!

Considering man's natural inquisitiveness, though, the newness of the idea of a "cross" is surprising: Only since Thomas Knight of England crossed garden peas in 1787 and demonstrated that one characteristic (for example, smooth seeds) was dominant over another (i.e., wrinkled seeds) has there been rhyme or reason to the "crosses" constantly made by Nature and occasionally by man.

It seems almost unnecessary to explain here that most plants bear flowers that contain both pistil and stamens in juxtaposition, although this idea was not common knowledge until the 17th century. Early observers seem to have been led astray by a few economically important plants, such as date palms, which did indeed occur in two sexes, just as mammals do, thus requiring both a male plant and a female one for seed production. At any rate, if you will brush the pollen from any common petunia in your garden onto the pistil of the same flower the job will be done; the base of the pistil will swell, and seeds will eventually form in the pod which results. The process occurs regularly in Nature, with insects, wind, or (rarely) water carrying the pollen, and the only real distinction so far as natural species are concerned is whether a given flower normally pollinates itself (self-pollination) or whether its pollen usually fertilizes a flower nearby. In the latter case, a "cross" of sorts results, but of course the choice of parents is entirely at random, and the species is spoken of as naturally "cross-pollinated."

At this point: enter the plant breeder, who makes a strictly controlled cross between carefully chosen parents. If he is working with plants usually propagated by cuttings, buds or grafts, he need make only one successful cross, since the resulting "hybrid" will be increased by vegetative means until enough plants are assembled to supply the market. The method has been used since Mendel's laws were published (and indeed, before, though the successful breeder of the 19th century relied more on luck and patience than science) and the result can now be patented, bringing the originator of a new apple or rose, credit, compliments, and these days, cash.

The advancement of the art was more leisurely in the field of annual plants, since the more common vegetables and flowering annuals are marketed as seeds. Therefore, it is not the result of the breeder's cross *but the seed that cross produces* which must grow into a plant satisfactory to the end user. Here Mendel's laws begin to operate in a most frustrating way: The hybrid result of a cross between two dissimilar parents (for example, a red petunia and a white one) may be glorious indeed, but if those hybrid flowers are then self-pollinated, as normally happens in a seed producing

field, and the resulting seed planted in the garden, the plants that grow will be a startling mixture of blooms resembling one parent or the other in varying degree but generally combining the most undesirable characteristics of each! Plants can differ in size, shape, height, flower size, flower color, foliage color and shape, earliness, vigor, and a thousand other ways, not the least of which is seed producing ability—an important point with the commercial producer.

Thus, in annuals, the plant breeder's work is just begun when he makes his initial cross, producing what is known as the F_1 (for first filial generation) hybrid seed. The seed produced by the hybrid, called the F_2, is planted the following season and the above mentioned mixture of progeny is culled ruthlessly, leaving a few of the most promising plants to produce the F_3 seed, which is again planted and selected for the F_4, and so on until the result is fairly uniform and represents a new variety similar to both parents but not identical with either.

All through the process of developing this new variety (called "open-pollinated" or "true breeding") the modern plant breeder is reassured, at least ,by the knowledge that order will eventually be brought out of chaos. His predecessors were not so fortunate. Imagine the consternation of the 19th century breeder whose skilled eye picked out a fine hybrid from an ordinary field, only to have it "break up" in the very next generation! The alibis in those days must have been ingenious, and of course, there was always an occasional mutation to confuse matters further. It was not until Gregor Mendel proved that the "break-up" occurred according to definite laws, and *could be predicted*, that the breeding of annuals got a solid scientific base, and progress has been considerably faster in the last fifty years.

By this time, it should be clear that the petunia breeder envies his brother the rose breeder, and you can see why. Take, for example, the matter of sterility. Will a fine hybrid tea rose not set seed? Too bad, but it doesn't really matter—roses are propagated from budwood. On the other hand, when a fine petunia refuses to make viable pollen, it's the end of the line—the plant may be grown from cuttings for a season or so, but disease finally takes it and the strain is lost. Again, the dream of all small boys is a seedless watermelon, but that is obviously a contradiction in terms, for melons are short-lived and such a cross would have to be hand-made anew every spring.

And now we pause for a moment's contemplation. For it *is* possible, of course, to make that cross anew every spring. Expensive, but possible. Given two parents with known pedigree, the plant breeder of annuals can make the identical cross year after year, producing a perfectly predictable hybrid every time, thus passing on to the gardener the virtues of a hybrid in annual flowers and vegetables. The seeds just cost more.

Well, what does it cost to produce "hand-made seed" every year for sale, as compared with conventional open-pollinated methods? That depends on many things: the number of flowers per plant through the season, the length of the flowering season, the size of the pollen-bearing members, and several others. At the low end of the cost scale stands hybrid corn, of which practically everyone has now heard, since 90% of the U.S. corn acreage is now planted to it and even popcorn cans emphasize the word "hybrid." Hybrid corn costs about 50% more per bushel than ordinary corn, and of course, it produces a much superior yield for the farmer. Certain petunias are at the top of the cost scale, since they are priced at approximately *one hundred times* the cost of ordinary petunias, but here too there is superior "yield," this time to the professional plant grower, which is important enough to justify the cost.

Let us look at this simple "cross" more closely to see why it is so costly: First, of course, we need one plant to supply the pollen. That part is easy—every flower has more than enough. Second, we need a female or seed parent, and this plant should be vigorous enough to survive and flourish in big seed fields. When the pistil of this seed parent is receptive, no pollen

must touch it but the pollen we deliberately place there. For that reason, the stamens of the seed parent must be removed before they make pollen—in fact, to be safe, before the flower has completely opened. This, however, is a hand operation, not too difficult when making one or two crosses, but work indeed when making thousands. A full-grown petunia plant may have as many as twenty flowers on it, with four or five new ones opening each morning all summer long. Since an acre of petunias contains about 25,000 plants, one may calculate that roughly 100,000 flowers must be emasculated each morning to keep an acre of seed parents free from self-contamination. Then, of course, the proper pollen must be applied, again by hand—but why go on? There is no longer any mystery as to why hybrid petunia seed costs money!

Contrast this state of affairs with the situation in hybrid corn: each seed parent bears just two tassels, and when these are removed no more appear. They are big enough to be grasped by hand, and, although a large field crew is needed for a short time, the de-tasseling is done in summer when thousands of teen-agers are available for temporary work. Then the wind carries the pollen over from the pollen parent and the job is done. Of course, this is a very simplified explanation, and growing hundreds of acres of hybrid corn this way is still quite a chore, but it is easy to see why the revolution in plant breeding began long ago in corn and is just now getting started in petunias.

So much for *what* is done—now let us consider the *why*. A hybrid in vegetatively propagated plants such as roses is the logical way to new varieties, but if a hybrid is such a costly thing to produce in the short-lived annuals, why bother with it? What does it offer in the farmer's field or your own garden that makes it worth the price? The answer is heterosis or "hybrid vigor," first observed by Kolreuter in 1760. Briefly, he noted that a cross between two pure-line parents produced an F_1 hybrid that was much more vigorous than either parent. Not necessarily taller, nor larger, but simply stronger and more able to resist diseases, insects, and extremes of climate. Such a virtue is welcome indeed in our cultivated varieties, many of which have become so inbred that they survive only when given loving care.

Secondly, if the parents are sufficiently "true" (that is, pure in a genetic sense, which usually requires six to eight generations of strict self-pollination) the F_1 hybrid of a cross between them will be remarkably uniform. That too, is a virtue not always found in present garden types.

Thirdly, many otherwise impossible things can be accomplished by the F_1 hybrid method. The seedless watermelon, for example, is quite practical. The fruit develops normally but the seeds do not. A hybrid that behaves this way is the product of crossing certain pollen parents on to a perfectly normal seed parent. The double petunia is a hybrid too, made by crossing pollen from a double on to a normal single petunia. The result is all double, but these double flowers are incapable of bearing seed. Other applications are easy to imagine—how about a garden lettuce, for example, which would never "bolt" and make a seed head however warm the weather? That these several virtues are worth what they cost has been amply proved in recent years by the sellout response to hybrid tomatoes, cucumbers, melons, snapdragons and petunias offered on the market in a small way. Largely, it has been the professional who has seen the benefit, but amateurs are discovering too, that the bonus of flowers and fruits under difficult cultural conditions is well worth the additional 50c to a dollar invested. At the present time, most F_1 hybrid work is concentrated in the simple flowers (i.e. tomatoes, melons, snapdragons, petunias) because they are easier to work with, but only a suitable technique for the composites (i.e. zinnias, cosmos, cauliflower) is lacking for the F_1 hybrid idea to sweep to every corner of the world of garden annuals.

Even the cost may eventually come down to a point where hybrids in flowers and vegetables can be on the mass-production basis now enjoyed by corn. One

solution lies in the development of seed parents that are "male-sterile" so that the expense of hand emasculation is avoided. There are already hybrid onions produced in this way, and prospects look good in many other species, but that's a subject for another article. In the meantime, try the new F_1 hybrids in your own garden to see what tremendous progress has already been made. After a slow start, plant breeders of annuals have at last got a technique that promises to revolutionize their industry, and sparks will fly in the next few years!

GROWING NOTES

GEORGE H. SPALDING

Chorisia is a Central and South American genus of flowering trees containing not more than six species as it is presently known. It is one of the Bombax family and was named for Ludwig Choris (born 1795) an artist with Kotzebue's expedition. This genus is not too well known in this country and there seems to be some confusion concerning it. Mr. E. A. Menninger's article in the National Horticultural Magazine, January 1953, pages 21 to 32 is recommended to anyone interested in learning more about this genus.

C. speciosa the subject of this note is one of the most beautiful of the group and is found from Brazil to Argentina. In Southern California it is a tree to 70′ or more with large pink flowers from November to January. It's hardiness has not been too well determined but large specimen trees can be seen at the Bel Air Hotel and on the grounds of the Southern California Automobile Club in Los Angeles. There is reported to be a tree on the grounds of the Patton State Hospital near San Bernardino, but the writer has not seen it. The Bel Air tree is the finest seen in the area so far and is a spectacular sight when in full bloom.

Dr. Samuel Ayres, Jr., of La Canada, California, has worked long and hard to have more and better flowering trees planted along our streets and highways and in our parks. In October, 1953, he sent the Arboretum a large quantity of *C. speciosa* seed obtained in Brazil and Argentina. From this seed we raised over 400 plants which have been distributed to cities from San Diego to Santa Barbara and east to Pomona for trial plantings along their streets. The purpose of these test plantings is to determine the range of hardiness and tolerance to varied soil and water conditions.

In the Nursery, the culture has not proved difficult. The seed, which is supposed to have a short period of viability, was planted immediately in a mixture of Georgia peat moss and sponge rock (50-50 by bulk). It germinated over a period of 7 to 23 days. By May, 1954, the trees were 4′ tall in 5 gallon cans and ready for distribution, so it is one of our more rapidly growing trees. The trunk of *C. speciosa* is usually thickly covered with short stubby spines. In this group of seedlings there was considerable variation from heavily spined to completely spineless. There seems to be some indication that the height of the tree, or at least the rate of growth, may be linked to the spinyness of the trunk. The spineless individuals are much taller than those with spines at the present time.

Further reports will be made on these plantings when definite conclusions can be made.

International Flower Show 1955: Mar. 11-20, incl., at Hollywood Park, Inglewood, Calif. Educational exhibits featuring California Natives, and adopted flora acquired through the California Mission days.

Erratum: Corrected title of article by Richard M. Beeks in Vol. IV, No. 4, Autumn 1954, p. 79: *History and Parentage of Zinnia Cultivars.*

PETER RIEDEL

Courtesy of Santa Barbara News-Press

"To those who know the solitude of the eternal skies—to those who have washed their conscience in the pool of northern lights—to those who have 'told' the southern stars as a monk tells his beads—and to all other who have special testimony that the universe is alive with mysticism and resonant with song . . ."

PETER RIEDEL

(May 17, 1873 — December 5, 1954) JOHANNES PETRUS BRUINWOLD RIEDEL, plantsman and horticulturist, active in Southern California's horticultural history for a full half century, lives still in the hearts and gardens of many a California family, generations of whom have settled in the Santa Barbara area during his lifetime there.

Peter Riedel — the characteristically sturdy name by which he is best known — came to the United States from his native Holland in 1893. Within a decade he had commenced the horticultural work and study which soon made him a valuable aid to residents within his range of knowledge and activity. His particular efforts throughout his career have been in the interest of the home garden and the maintenance gardener. How well he adapted his talents to those interests, in one instance at least, is recorded in his capable teaching of adult classes in horticulture, both daytime and evenings, during the prime of his life after abundant experience whereof he could speak with authority. Later still he served as Horticultural Consultant in the Park Department of Santa Barbara. His whole aim appears to have been directed toward enhancement of that city and its environs, through intelligent maintenance of the private garden, and of those garden areas easily accessible to the public eye.

The basic training of Peter Riedel was acquired after his High School days, in his native country at the Gardeners' Trade School and the Agricultural and Horticultural College at Wageningen. He emigrated to the United States in 1893. In 1905 he entered a partnership with the famed Dr. Emanuele Orazio Fenzi, known to his American associates as Dr. Francesco Franceschi, (see *Lasca Leaves,* Vol. IV, No. 1, Winter 1954) who during this period initiated the introduction of much of Southern California's adopted flora. Functioning briefly as the Southern California Acclimatizing Association, the partnership was shortly terminated. Dr. Franceschi returned to Italy on a responsible mission and thereafter business relationships between the two men were never rejoined.

Within the current decade Peter Riedel has made strides recording much of the valuable information he has been accumulating through his long lifetime, working on a mammoth set of volumes titled "Plants for Extra-Tropical Regions—A Catalog of the Plants That Are, Have Been, or Might Be Grown Where the Orange and Avocado Thrive, Including Brief Mention of Others Every Plantsman Should Know." Alphabetically, the letter "S" in this work had been reached, and because some provision has been made to carry the work to a possible completion, it is hoped that the finished work may be made available to horticulturists. Although the recent past has witnessed a slowing up of working tempo, and the immediate weeks preceding Peter Riedel's "last tribute to nature" were beset by acute distress, perhaps especially for Atje Koopmans Riedel, his childhood sweetheart, and wife since 1897 who survives him, still, his relinquishing of his natural life has its constructive aspect in the heritage he has left to his fellow-horticulturists and numerous friends — an influence to be felt in the future beyond the confines of the boundaries of California through his work and study for the benefit of true gardeners everywhere who may read of his work and profit thereby.

ARBORETUM MILESTONE

Director, Los Angeles State and County Arboretum

R. J. SEIBERT

THE MONTH OF JANUARY, 1955, marks a significant step in the progress of the Los Angeles State and County Arboretum. Members of the Arboretum Foundation and readers of *Lasca Leaves* will be interested to know that the Arboretum opens to the public on this date, to be open on *Sundays only* until further notice.

The Arboretum will be open between the hours of 10:30 a.m. and 4:00 p.m. Admission is free of charge, but everyone entering will be required to sign an admittance card. Members of the Foundation, bearing their membership card and showing it to the guard at the entrance at 301 N. Baldwin Avenue will be admitted without signing an admittance card. This applies to members only and you are requested to have your guests and family sign the admittance card, or write for admittance cards ahead of time.

The Arboretum Foundation is underwriting the rental of a grounds transportation vehicle which will facilitate the public in moving from the main entrance to the historical preserve and back to the main entrance. This will mean that the public will not have to walk to and from the portions of the Arboretum now ready for public view.

Since the Foundation is underwriting this means of transportation and its insurance, the public and members will be expected to contribute a donation in boxes to be provided on the "train."

Because the Arboretum is still in its infancy of development and only very limited portions of the Arboretum are ready for public view, the public will assemble at the Main Gate at 301 N. Baldwin Avenue from which conducted tours will leave on every hour and half hour between the hours of 10:30 a.m. and 4:30 p.m. on the Sunday openings.

Although the Arboretum can only be opened on Sundays for the time being, and until further developments and plantings are done, the public will now have the opportunity of viewing the Arboretum and following closely its development.

Of particular interest is the historical preserve which includes the Hugo Reid Adobe (to be restored), the "Lucky" Baldwin "Queen Anne" Cottage, now fully restored and the Baldwin Coach Barn (to be restored). Within the Historical preserve may be seen the old trees planted by the previous owners of "Rancho Santa Anita," the home site of which now comprises the grounds of the Los Angeles State and County Arboretum.

The Los Angeles State and County Arboretum is devoted to the study of exotic trees, shrubs and other ornamental plants which can be grown in Los Angeles County and Southern California. The plantings which are to form the future plant displays at the Arboretum are largely obtained through seed from many different countries of the world. The plants from these seeds are grown at the Arboretum where they are studied and selected for planting on the Arboretum grounds. Here the public will be able to see and learn more about the plants which are grown and which plant lovers would like to grow in Los Angeles County.

Picnics are not permitted on the Arboretum grounds; however, complete picnic facilities are available at the Arcadia County Park one and a half miles east of the Arboretum.

For further details regarding new policies and regulations attendant upon the opening of the Arboretum to the public, see pages 12 and 13, and NAMES, NOTES, and NEWS, page 23.

NAMES, NOTES AND NEWS

Of special interest to Arboretum Foundation Members: with the opening of the Los Angeles State and County Arboretum to the general public on Sundays, several major policy changes necessarily go into effect, in order to comply with administrative policy and regulations under County Civil Service. All Sunday visitors, *including Foundation Members,* will be requested to accept the guidance officially provided for tour of the grounds and buildings. Reason for this will be readily understood, we are confident, for the following purposes:

1. To provide all visitors adequate means of seeing those portions of the Arboretum now developed to the point of being ready for public viewing.
2. To avoid the discomfort and inconvenience which visitors would encounter in being allowed to go into those areas not yet properly developed for the safety and interest of visitors.
3. To provide all visitors with background information relating to the Arboretum, historically and horticulturally, adding immeasurably to their enjoyment and profit in visiting it.

Heretofore, conducted tours by pre-arrangement through the Arboretum office have been offered to sponsored groups. This feature will continue, but under a slightly altered schedule, in order to conform with County Civil Service hours which provide for two days a week off-duty (i.e. a 5-day, 40-hour week). Mondays and Tuesdays will be the official off-duty days for those members of the grounds staff who assist in conducting the weekend tours. Sponsored groups may now be arranged for the following days only:

Wednesday through *Saturday*, except legal holidays, between 8:30 a.m. and 3:00 p.m. Call DOuglas 7-3444.

Botanists and horticulturists, as well as other qualified individuals, may apply for entrance to the Arboretum grounds for field study or other allied purposes. Grounds permits will be granted to them in an effort to assist such persons in their work and study. Grounds permits are also issued to members of California Arboretum Foundation, Inc., members of Southern California Horticultural Institute, representatives of member clubs, and other qualified individuals, on Mondays, through Fridays, except legal holidays. Permits may be sought and obtained at the temporary office building, inside and directly to the west of the temporary entrance at 291 North Old Ranch Road, Arcadia, or inquiry may be made by calling DOuglas 7-3444. Parking outside the gate is requested, since private cars are not permitted inside the grounds. The permits are issued between the hours of 8:30 a.m. and 3:00 p.m., and are to be returned to the office before leaving in order that record of them may be filed. Grounds close at 4:30 p.m.

Invitation is extended to visit the Arboretum grounds ferquently, accepting opportunities to watch these early stages of a long term development which is expected to reach major significance in future years.

* * *

The first meeting of the National Shade Tree Conference to be held west of the Mississippi, will be the occasion of considerable horticultural interest to those attending it next August 1-5, in Santa Barbara, California.

At that time the Western Chapter of the National Shade Tree Conference will be host to the National group. It is expected that there will be 250 delegates from the Western Chapter region, which comprises the 12 Western States and British Columbia, with an estimated 400 delegates from the other five regions.

The purpose of the Conference is to bring together tree workers, scientists and administrators of arboriculture and its allied fields for discussion of various facets of the selection, planting, and care of shade and ornamental trees.

The National Shade Tree Conference has as one of its objectives the establishment and administration of standards for recognition and regulation of the practice of arboriculture and its component skills. Also, the conference works toward appropriate legislation to supplement these objectives.

A great deal of effort on the part of the Conference has been expended to stimulate activities pursuant to the establishment and maintenance of arboreta in appropriate locations throughout the nation, and to the preservation of native stands of timber and other plant growth.

The Western Chapter, N.S.T.C., is planning a truly western hospitality program for the delegates, many of whom will be making their first trip to California. The meetings of the Conference will be held in the Santa Barbara High School Auditorium and the patio of the high school will be used to set up a demonstration area for supplies and equipment. There will be an outdoor demonstration of the equipment too large for the patio area.

All persons who appreciate the beauty, shade, and practical value of street and ornamental trees can obtain valuable information and professional guidance from the Conference. All of the members of the Western Chapter, N.S.T.C. extend a most cordial invitation to the general public to register and attend these meetings.

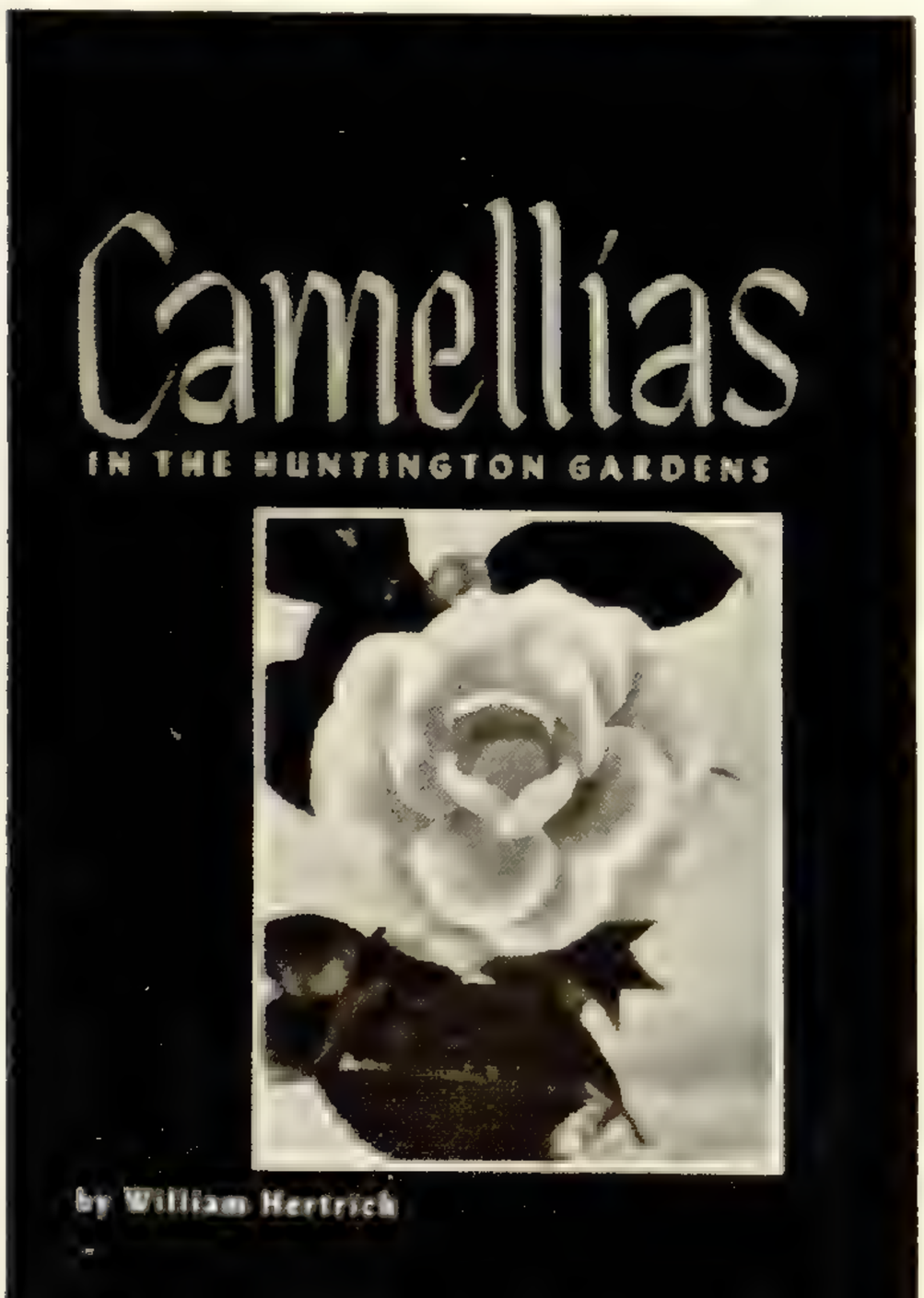
* * *

Calendar Notes: (Continued from p. 13)

Herb Society of America, Southern California Unit: January meeting to be a study of the family *Rosaceae*, with special emphasis on those members of the genus *Rosa* which may be called herbs. For details of time and place of meeting, telephone Unit President, Mrs. A. D. Richardson, SYc 7-9670. Regular meeting of the 1st Monday of the month to be changed because of conflict with New Year's weekend activities.

BOOK REVIEWS AND COMMENTS

Lasca Miscellanea. Vol. 2, was issued in October 1954 as the *Annual Report of 1953-54.* of the Los Angeles County Department of Arboreta and Botanic Gardens, an impressive recounting of the year's progress under County Administration. Paper bound, multilithed, 46 pages, 10 illustrations, including drawn map of the grounds. *Lasca Miscellanea,* Vol. I, was announced and reviewed in *Lasca Leaves,* Vol. IV, No. 2, Spring 1954, p.48, the complete, hitherto unpublished index of John Hutchinson's comprehensive work, *A Botanist in Southern Africa..* Both issues are available through the Arboretum offices, Box 688, Arcadia, Calif., at $2.00 per copy ($1.00 to California Arboretum Foundation, Inc. members). Special exchange arrangements may be solicited by other botanical and horticultural institutions.



Camellias in the Huntington Gardens—William Hertrich. Huntington Library, San Marino 9, California, 1954. 380 pp. including 249 black and white photographs. 3 colored plates. $10.00

William Hertrich, Curator Emeritus of the Huntington Botanic Garden, is eminently qualified to write of the camellias at the Huntington Garden, for he has watched the collection grow from the original purchase of a few plants in 1908 to the present 5-acre camellia garden ultimately to occupy 10 acres of land. This is the first in a series of volumes which he is writing to describe these camellia plantings at Huntington.

The Huntington camellia garden developed slowly through chance acquisition and occasional purchases until the year 1942 when a definite program of enlarging and developing it was undertaken. An agreement reached with the Southern California Camellia Society in 1944 to establish a camellia test garden at Huntington resulted in further rapid expansion until the collection now contains 1000 cultivars, or varieties, as they were formerly called.

The horticultural treatment given in the first part of this volume should be of extreme interest to every camellia grower, whether he has few plants or many. Common problems of culture such as planting, transplanting, watering, fertilizing and pruning are treated with especial reference to the southern California climate. Particular emphasis is given to the matters of adequate drainage and proper watering, for it seems that poor soil-water relationship is a common cause of failure in growing camellias in this region. Bud drop, the dismay of so many home gardeners, is described and its causes given.

The discussion of individual cultivars, which occupies the bulk of the volume, is noteworthy for its careful cataloguing of the characters of each plant and for the black and white photographs which illustrate it. Two hundred and forty-nine cultivars of *Camellia japonica* are included, each one represented by a descriptive paragraph and a full page black and white photograph of a flowering stem. The descriptions follow a definite pattern, giving characters of sepals, petals, flower centers, buds, leaves, and habit. It is thus assured that the same facts are given for each plant and it is easy for the reader to pick out the salient characters of any one in which he is interested. The cultivars are listed alphabetically with synonyms given where they exist. Noteworthy material on history or behavior is included at the end of the descriptions of some plants. Only long years of close observation could result in such carefully detailed information as is given here.

The photographs, all taken at the Huntington Garden, are superb. It is not often that flower texture and quality are so beautifully reproduced as in this set of pictures, and both photographer and engraver are to be complimented upon the quality of the product. Some few may regret that the pictures are not in color, but to the reviewer the black and white photographs show far more of the character of the flower than do the three color reproductions which are included.

The volumes yet to be published in this series will include the remaining cultivars of *Camellia japonica* and those of the other species of *Camellia.* In view of the tremendous interest in the genus and the rapid development of cultivars in *C. sasanqua* and *C. reticulata,* these later volumes should prove as helpful as this first one of a handsome series.

KATHERINE K. MULLER
Director, Santa Barbara Botanic Garden
Santa Barbara, Calif.

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BEGONIA MODEL.

Illustration of hybrid *Begonia x* Model in J. Veitch's *Catalogue of Plants* of 1875.

VEITCH'S NURSERY

Pioneer Hybridizers of Tuberous Begonias

ELMER J. LORENZ

POSSESSING BEAUTY in both foliage and flowers begonias have attracted the attention of growers and hybridizers since almost the moment they were first introduced.

One of the early and perhaps the most active group of individuals in the introduction and hybridizing of begonias, particularly the tuberous section, was the well known nursery of Messrs. James Veitch and Sons, located at Chelsea, England. This firm, with its famous botanical collectors and hybridizers, was famous for its introduction of many woody plants, orchids, greenhouse (stove) plants, ferns, bulbs, etc. Among their collectors they employed the work of such men as Thomas Lobb, William Lobb, and E. H. Wilson. John Dominy, John Seden, V.M.H., and John Heal, V.M.H., were the most active hybridizers who gave wider interest to plant lovers by their introduction of new hybrids.

The Veitch Nursery has existed in name only for a number of years, having retired from business during the early part of 1900. However, how many know of the active part this organization played in the introduction of new begonias and hybrids? Although many of the hybrids they introduced have been replaced by handsomer plants, a review of their work as a forerunner to many of the present-day hybrids may prove of interest to growers of begonias. A few of the hybrids are still grown today by the plant specialist because of their beauty, and a number of the species they introduced are quite common in begonia collections.

The records of plants introduced by the Veitch Nursery are scattered throughout a number of magazines, particularly the Curtis Botanical Magazine, and in the various catalogues issued by the nursery itself. However, probably the most complete record is contained in "Hortus Veitchii" by James H. Veitch, printed for private circulation only, in 1906. Much of the historical material on the subject at hand is rare and unobtainable, and I have quoted freely from information contained in "Hortus Veitchii."

Almost fifty years ago John H. Veitch wrote under the heading, *Begonias—Andean or Tuberous-Rooted Species*: "The numerous garden varieties of this section of the genus are among the most popular of the summer-flower plants of the present day, and probably no race has so quickly gained favour or become so widely distributed.

"This pre-eminence is due to the rich and varied colours of the flowers, the many forms they take, and the ease with which they can be grown."

A half-century later the same enthusiasm continues unabated!

The modern summer-flowering tuberous begonias are the result of hybridizing between seven wild species, all natives of the Andes of South America. Messrs. Veitch introduced and distributed five of the seven varieties into England. *Begonia boliviensis* A. DC., *B. pearcei* Hook. f., *B. veitchii* Hook. f., *B. rosaeflora* Hook. f., were introduced through the efforts of Richard Pearce; and *B. davisii* Veitch was introduced by Walter Davis. The two tuberous begonias not introduced by Messrs. Veitch were *B. clarkei* Hook. f., and *B. cinnabarina* Hook. f., which were made available by E. G. Henderson of Pine Apple Place, England.

Weddell first discovered *Begonia boliviensis* in the Bolivian Andes, but it was Richard Pearce of Veitch's Nursery who first introduced this begonia into cultivation. *B. boliviensis* was exhibited for the first time at the International Horticultural Show in Paris, in May 1867. It is stated to have "attracted more of the attention, both of botanists and horticulturists, than

any other plant then brought to that magnificent exhibition." This beautiful begonia is still found growing in our collections. The plant is of erect growth to approximately twenty-four to thirty-six inches high, but as the plant matures it has the habit of becoming pendulous. The lanceolate leaves on very short petioles are four to five inches long and sharply serrated, bright green above, with red margins, and pale green beneath. The flowers are produced on short stems, in the angles of the leaves, and are bright cinnabar-scarlet, the male flower being twice as long as the female. Klotzch placed *B. boliviensis* in a new proposed genus called *Barya* because the stamens were in an elongated column, instead of the globular cluster typical of begonias. However, De Candolle eventually merged the new genus *Barya* into the genus *Begonia.*

Begonia pearcei was the next outstanding discovery to be introduced by Veitch's Nursery. This species was sent to England from La Paz, Bolivia, by Richard Pearce. As this begonia had yellow flowers it was an important parent in introducing the yellow and orange colors in the tuberous begonia hybrids. These colors were unknown in the tuberous hybrids prior to the introduction of *B. pearcei.*The ornamental foliage of many of our present-day tuberous hybrids is the result of *B. pearcei* ancestry. This species was distributed in 1866, and it is still quite common in our present-day collections.

During the year 1866 Richard Pearce introduced another tuberous begonia which he had discovered near Cuzco in Peru, at an elevation of 12,000 to 12,500 feet; it was named *Begonia veitchii,* and was first flowered in England in 1867. Because this plant was found at such high altitudes it was thought that it might prove hardy in certain parts of England. However, *B. veitchii* failed to withstand the combined effects of cold and damp English winters. It is mentioned as a superb species and was described by Sir J. D. Hooker, in the *Botanical Magazine* as "Of all the species of Begonia known, this is, I think, the finest. With the habit of *Saxifraga ciliata,* immense flowers of a vivid vermilion cinnabar-red, that no colourist can produce. . . ."

B. rosaeflora was another of Richard Pearce's important introductions, and though it resembled *B. veitchii* there were marked differences. The petioles of the leaves were red, and the flowers had the color of the wild rose rather than the cinnabar-red of *B. veitchii. B. rosaeflora* was actively engaged in the production of hybrids and played an important role in producing some of the most beautiful tuberous begonias of the late nineteenth century.

"Another interesting fact regarding this species is that from seedlings obtained by crossing light-coloured varieties, the first white-flowered tuberous Begonia was obtained, and sent out under the varietal name of Queen of the Whites.

Davis found that the colours of the flowers in this species varied greatly, and a white-flowered form sent home by him some years later, proved identical with the seedling known as Queen of the Whites."

Begonia davisii was the last Andean species of tuberous begonias to be introduced during Veitch's time. This begonia was named after its discoverer who found it growing near Chupe, in Peru. Because of its dwarf compact habit and erect flowers this begonia played an important role in hybridizing work carried on by John Seden, "who rapidly evolved several garden forms possessing most desirable qualities and of a very high order."

Begonia boliviensis was one of the species used by John Seden in producing the first hybrid tuberous begonia raised in England. The result of the cross between *B. boliviensis* and an unnamed Andean species was called *Begonia x sedenii* as a compliment to the hybridizer. The Royal Horticultural Society awarded *Begonia x sedenii* their Silver Floral Medal as the "best new plant shown for the first time" at their New Plant Show held on June 2, 1869. This begonia was first distributed in 1870, and was figured in the Plant Catalogue of Veitch's Nursery of that year, described as "of the same upright habit as *Begonia boliviensis.* but with larger leaves, the veins of which are

slightly rose-coloured; the flowers are of the richest magenta and of large size."

The first double-flowered tuberous begonia was obtained from seeds produced by self-fertilized flowers of *Begonia x sedenii.*

Begonia x chelsoni was the next begonia hybrid produced by John Seden and it was the result of a cross between *Begonia x sedenii* with *B. boliviensis.* This was a case of crossing the offspring with one of its parents and the resulting hybrid resembled *B. boliviensis*, but the flowers were larger and a glossy red in color.

Begonia x intermedia followed and it was the result of hybridizing two Andean species, namely *B. veitchii* and *B. boliviensis.* This hybrid was first distributed in 1872 and described in the Plant Catalogue as follows: "In habit it partakes strongly of *Begonia boliviensis*, being a strong upright-growing plant, branching freely and attaining an average height of fifteen to eighteen inches. The leaves have much the form and substance of *Begonia Veitchii,* but are toothed like *Begonia boliviensis.* The flowers are of the size and form of *Begonia Veitchii* and resemble it also in colour, but are of a rather darker shade."

In 1874 two more begonia hybrids were offered: *Begonia x* Stella, the progeny of *Begonia x sedenii* crossed with *B. veitchii,* and *Begonia x* Vesuvius, the result of *B. clarkei* crossed with *Begonia x sedenii. Begonia x* Vesuvius "had bright orange-scarlet flowers, combined with a robust habit, a useful and popular subject for summer-bedding." Offered for distribution in 1875 were *Begonia x* Excelsior and *Begonia x* Model. *Begonia x* Excelsior was obtained from *Begonia x chelsoni* crossed with *B. cinnabarina*, and it is described as a "very free-blooming variety, with large flowers of the form of *Begonia veitchii* and the colour of *Begonia cinnabarina.* It was one of the bedding Begonias of its time."

The offspring of the cross between *Begonia x sedenii* and *B. pearcei* was given the name of *Begonia x* Model. The flowers were described as "of a delicate rosey-blush colour, and of the finest shape."

During 1876 two named hybrids, *Begonia x sedenii* and *Begonia x intermedia,* were crossed and produced the named variety *Begonia x* Acme. It is described in the Plant Catalogue of that year with the following description: "The flowers are of a delicate orange-pink, tinged with a deeper shade of orange-rose. In well-grown plants the flowers are large, the male or staminate ones from 3 to 4 inches between the extremities of the alternate narrower petals; the petals of both staminate and pistillate flowers are beautifully veined symmetrically with the edges." This same year saw another cross between *Begonia x sedenii* and *Begonia x* Stella which was called *Begonia x* Kallista. The flowers "of a rich vermillion-scarlet, were the darkest shade of that colour known at the time. Later Kallista gave rise to many varieties from self-fertilized seed."

The next year, 1877, saw the appearance of *Begonia x* Emperor resulting from a cross of *B. clarkei* with *Begonia x chelsoni,* "which proved a marked advance on the forms then existing, having brilliant orange-scarlet flowers of large size." Following *Begonia x* Emperor appeared *Begonia x* Monarch resulting from the crossing of two hybrids *Begonia x sedenii* and *Begonia x intermedia.* It is mentioned that this begonia "with bright vermillion-scarlet flowers, was, when distributed, undoubtedly one of the finest of all the earlier successes."

The hybrid tuberous-rooted begonias produced mostly flowers of various shades of reds, but a definite break occurred with appearance of *Begonia x* Queen of the Whites which was developed from a batch of seedlings of *B. rosaeflora. Begonia x* Queen of the Whites is described as "resembling *Begonia rosaeflora,* dwarf and furnished with orbicular leaves and deeply-sunk veins; the flowers, 2 to 2½ inches in diameter, milk-white in colour, were freely produced on erect scapes, and the variety largely used as a parent, became the forerunner of all the white and light-coloured forms now so numerous."

To be continued

AN HONOR TO WILLIAM HERTRICH

A second national honor came to William Hertrich, Curator Emeritus of the Huntington Botanical Gardens, San Marino, when The Garden Club of America bestowed its Medal of Honor upon him during its annual national convention in Houston, Texas, where he and Mrs. Hertrich journeyed to attend the presentation banquet, March 9th, 1955. The award had not been made since 1949 and Mr. Hertrich is the ninth recipient since it was instituted in 1920. Similar distinction was accorded him by the Massachusetts Horticultural Society when he was awarded the 1950 George Robert White gold Medal of Honor given annually "for eminent service in horticulture," presentation of which was made in San Marino by the Society's representative, Alfred C. Hottes (see pp. 36, 37, current issue *Lasca Leaves*), on April 7, 1951. Within the 1940-50 decade, Mr. Hertrich shared this honor with Sir Arthur William Hill, Director of Royal Botanic Gardens, Kew, England, Dr. Elmer D. Merrill of the Arnold Arboretum, the late Lord Aberconway, Royal Horticultural Society, London, Dr. Wilson Popenoe, Dir. Escuela Agricola Panamericana, Honduras, and others of equal stature. A full fifty years ago Mr. Hertrich, as a young man of twenty-seven years, ten of which had already been devoted to apprentice pursuit of knowledge in his chosen field, came to southern California where he commenced his career, first as supervisor and superintendent of the late Henry E. Huntington's private estate, in San Marino. After Mr. Huntington's death in 1927 he became Curator of the Botanical Gardens. Under his direction this public trust of 200 acres of beautiful valley land, with its incipient Huntington Library and Art Gallery, grew to the extraordinary proportion and enviable cultural importance it enjoys today. The famed institution now functioning under a Board of Directors, runs more smoothly because of the stalwart yet self-effacing service of the man who still devotes his major energies to furthering its value as a repository of sound horticultural knowledge and plant material. The editorial body of *Lasca Leaves* is both honored and edified by Mr. Hertrich's close and ready association with its duties and responsibilities ever since its inception. We salute him with hearty congratulations on this new recognition of his fine purposes.

To the *Cactus and Succulent Journal of America*, Vol. 27, No. 2, March, 1955, goes the privilege of first reproducing photographs of the Medal of Honor, face and back, since *Lasca Leaves'* press date was prior to the presentation and photographing of the medal.

ANNOUNCEMENT

The California Arboretum Foundation, Inc., takes pleasure in announcing the appointment of Mrs. Lee Wray Turner as Executive Secretary-Manager of The Foundation to become effective April 1, 1955. Mrs. Turner's prior activity for the past twenty-eight years has been the directorship of the Film Location Bureau for the Assistance League of Southern California. In this capacity she has had frequent contact with the Arboretum and its personnel who welcome her charming efficiency in membership on the staff. From the above date Mrs. Turner's office will be maintained at 291 North Old Ranch Road, Arcadia, at the Los Angeles State and County Arboretum. The new office telephone for *The California Arboretum Foundation, Inc.*, will be DOuglas 7-8207.

To the ornithologist, to the bird-watcher, and the layreader with an eye for color: the March issue of *Arizona Highways*, published monthly by the Arizona Highways Department, is devoted almost entirely to a brilliant collection of bird photographs selected from a forthcoming work, "The Birds of the Western United States," by Don Bleitz, photographer and author, in 3 vols., 12″ x 15″, containing 500 full-page color illustrations, and text on substantially all species of western United States. The botanist and horticulturist will be interested in the 4 pp. given to the Pinyon Pine with range map and photographs.

BROMELIA BALANSAE Mez.

JOSEPH SCHNEIDER

Bromelia balansae Mez. is a prominent member of a very diversified family, the *Bromeliaceae*, so named in honor of Olaus Bromel, Swedish botanist. This plant group of about forty genera and about nine hundred species, ranging in size from the little inch-high gem, *Tillandsia erubescens*, to giants whose old stems appeared to Andrè, plant explorer and traveller in Uruguay and adjacent lands, to be telephone poles when he first saw them. The family *Bromeliaceae* contains the well known pineapple, *Ananas comosus* (formerly known as *A. sativus*), the Spanish Moss (*Tillandsia usneoides*), and some of the most beautiful flowering plants of tropical and semi-tropical America, not excepting orchids. They are found from South Argentina to Texas and South Carolina. The family includes many economically important members, the pineapple widely cultivated for food, and the Spanish Moss whose wiry stems are used as vegetable fibres in upholstery, and several species in use mostly locally as a source of some of the finest of fibres for the making of fishnets, baskets and cloth.

Bromelia balansae had been known in California as *Bromelia serra*, until M. B. Foster of Orlando, Florida, a famous plant explorer of contemporary times, and a special friend of the "Bromels" as they are often called, identified the plant as *Br. balansae*. It honored a Mr. Balansa of Uruguay, the country where it is found in greatest numbers. Little is known here of Mr. Balansa. Botanically the plant has been recorded under various names, *B. guanensis*, *B. lacinosa*, and *B. karatas*. The late R. G. Atkinson of Leucadia, Calif., sold it, around 1930-1935, as *Br. viriderubra*, a name already in horticultural use for *Achmea fasciata*, and also for a hybrid of *Billbergia Saundersi*, and further, often applied to the well-known *Achmea porteana* (*Billbergia rosea*). To avoid this continued conflict, it was re-named *Br. rubro-viridis*. It is not known to me where Mr. Atkins first obtained this plant, possibly from the late Mr. Beecroft of Encinitas, who was the first one here in California to import bromeliads and seeds of bromelias from Europe.

Br. serra can be found occasionally in gardens of plant lovers. It is somewhat smaller than *Br. balansae* and when flowering can be readily distinguished, its inflorescence a roundish head about the size of a large fist, so densely covered with a white tomentum that the flower tips seem to be barely protruding from a cottony ball. The flowers rise above the enveloping bracts.

Br. balansae Mez. as grown in the Huntington Botanical Gardens, San Marino, Calif., is a conspicuous herbaceous plant, a fountain of deep green leaves, two to four feet high and as wide, forming at all times an attractive clean specimen. The plant is practically stemless, thirty to fifty or more leaves in a rosette, shiny dark green above, whitish below, arching gracefully, and ending in a long tapered point. The leaves are from two to four feet long, three quarters to one-and-a-half inch wide; the leaf bases are wide and succulent, tightly clasping the stem. The blade, rather stiff, slightly channelled, is armed with exceedingly sharp fine-pointed prickles, from three-quarters to an inch-and-a-half apart, pointing outward for the most part, but sometimes toward the center of the plant the prickles reverse and turn inward toward the base. The pressure marks of these prickles, formed before the leaves unfold, are discernible upon the upper leaf surface and even more on the lower, forming distinct and interesting patterns. The shiny green upper surface is very sparsely covered with a fine scaly tomentum, soon weathering off, but persisting upon the lower leaf surface, giving it a grayish appearance. These diminutive scales are moisture-absorbing organs characteristic of some xerophytic and semi-xerophytic bromelias; they often form attractive gray bands and patches. Parallel veins give the underside

a finely ribbed appearance; these veins about a hundred in number across the width of the leaf, are fine, very tough fibres of surprisingly high tensile strength, wet or dry. I do not know if these fibres are utilized where the plant is native. The fibres are in a single layer, unlike those in yuccas and agaves, where fibres are distributed throughout the body of the leaf. The tissue between upper and lower leaf epidermis is a thin layer of transparent spongy cell mass, fairly thick towards the stem end, and able to take up a surprising amount of water. Leaves after a long dry period are deeply channelled and prominently ribbed, but with moisture become turgid, the basal sheaths especially spreading and opening up the entire leaf rosette; few plants show a more refreshed appearance after a shower. The outer last rows of veins are another source of interest, showing an attractive wave pattern, the outermost vein forming a triangular hooked brownish prickle as the crest of the wave, the horn-like point sharply bent at an approximately right angle, never curved, its point paralleling the leaf margin, small, about a quarter-inch—but small as they are, their knife-like sharpness and fine point can penetrate the skin and lacerate severely.

One might ask, "Why keep such a thing in a garden?" It is at flowering time that *Br. balansae* has an almost irresistible appeal; in spring, or early summer, or at almost any time if a fairly mature specimen is shocked by transplanting, the center leaves begin to change color. Within a few weeks, slowly at first, the tips redden, and quickly the center of the plant assumes a brilliant red color,—a many-rayed flaming star, giving the plant its common name, "heart-of-fire," although it shares this name with other Bromels as well, which have similar habits. In the very center, very slowly at first, quickly after the start is made, the flowering stalk rises, and rising with it is the bright crown of leaves, surrounding the stem in a loose double spiral, the leaf blades at right angles to the spike-like inflorescence, white, papery, clasping leaf-bases tightly sheathing the short branches of the raceme. Towards the top the leaves become gradually shorter, and at the tip rudimentary. The inflorescence, stems, bracts, and sub-bracts are covered with a white mealy tomentum. Sub-branchlets with short-pedicelled flowers, from three to fifteen in number and in a flat cluster, push out from under the wrapping sheaths, the individual flowers three-quarters-inch long, three-petalled, peek out from their individual white bractlets.

The flower details are also most interesting. Petals are about three-quarters-inch long and three-eighths-inch wide, wine-colored, almost maroon, with a white edge at the rounded tip. The three overlapping petals form a tube and do not open wide, but they show the three-parted pistil, and a ring of surrounding bright yellow anthers. Within a few days, the inflorescence is fully developed, about two to two-and-a-half feet in height, with thirty to fifty clusters, in the same arrangement around the stout stem that groups the leaf rosette, apparently in a double spiral. The first flowers will still be in perfect condition when the very tip blooms, and will keep in fresh appearance for about two or three weeks, if the weather is cool and not too dry. The flowers seem to have a slightly fruity odor. Cool humid weather will favor pollination and development of the fruit. The flowers seem to be self-fertile; ants probably help in the pollinizing. The fruit is a bright orangey berry, three-quarters to one inch in diameter,—roundish, but when the numerous fruits are tightly packed in a cluster, they are likely to appear deformed because of the pressure. The tip of each is slightly depressed and bears the very persistent remains of the dried papery petals and stamens and pistil. In its early stage, the fruit is covered with a white, floccose tomentum that soon wears off. Each short-pedicelled berry is subtended by the tough papery bractlet about three-quarters inch long and three-eighths inch wide. The fruit is indehiscent, rather dryish; from one to fifteen seeds are embedded in a glutinous mass, surrounded by a gelatinous pulp with fibres running through it. These fibres running longitudinally are a

Left: Normal fruiting spike of *Bromelia balansae* Mez. about 6 months after flowering. *Right:* Rare abnormal fruit, club-shaped spike, cause unknown. Courtesy Huntington Botanical Gardens.

continuation of the fibres of the stemlet and are not netted. The skin of the fruit is faintly rugose, finely pebbled, tough, cartilaginous on drying and assuming an almost horny toughness. The fruit is said to be edible when very ripe, a stage it does not seem to attain here under the less favorable climatic conditions than it enjoys natively. It is sweet with an agreeable fruity taste, reminding faintly of pineapple. A short time after eating, however, it causes a very disagreeable rawness in the mouth and throat, lasting for many long painful hours. The effect seems to be due to a meat-digesting enzyme. It is said that in Uruguay, the fruit is used in a refreshing drink; the sugar content suggests fermentation possibility and it may be used in this way; after distillation, it should certainly furnish a very potent drink. The full-fruited spike densely set with the shiny fruit, is a long-lasting attraction in the garden, often lasting for a year or more. The fruit does not drop: this is due to lack of an abscission layer interposed between stem and fruit, the woody fibres of the fruit's stem continuing through into the fruit itself, and not allowing it to drop, as an apple does, for instance.

When the formerly bright red bract-leaves have reverted to their green color, they gradually become dry and droop, but the main leaf rosette retains its green color. Seeds are roundish, slightly compressed, numerous, brown, with a mealy protein-rich endosperm. They hold their viability for two years or more, and germinate readily. Seedlings come to maturity in from four to six years, depending upon growing conditions. The limited distribution of *Br. balansae* makes it seem improbable that the plant depends upon its seed for increase. Off-shoots rather, seem the means of the plant's perpetuating itself. Twelve to eighteen months before flowering, or as soon as the plant is well developed, one to four or more stolons will emerge from between the leaf-bases, near soil-level, at the lowermost tiers of

the leaf-rosette; light brown spears, slightly club-shaped, grow upward and outward, a head forming which resembles a pineapple, and the one- to three-foot, or more, stolon, arches toward the ground. This stolon is a bundle of tough fibres, half- to three-quarters-inch thick, tightly imbricated with finely toothed, stiff, long deltoid scale-leaves having horny tips. The scale-leaves are about two inches long and three-quarters-inch wide at base, covered with a fine powdery tomentum, the tightly clasping base brown and horny, shielding incipient root buds towards the tip ends. The head, leaning forward at a forty-five degree angle, seems to reach out greedily, almost comically eager, to start a new plant. Upon prolonged good contact with damp earth, this head will push out rootlets from the short, spreading, more papery basal leaves surrounding its neck, and with astonishing rapidity, on its own roots, fed from the mother-plant, a new *Br. balansae* is established.

Unlike many of the related genera, such as *Puya,* etc., which *Br. balansae* resembles in general appearance, it never seems to form additional heads directly on the old root stock. The mother-plant provides its many offsprings —sometimes for years—with moisture and nourishment; only very gradually does it shrivel and dry up, and by this time the young plants have reached considerable size and fully hide the dried remains of the old plant, so a clump always provides a clean, tidy appearance.

Br. balansae is not demanding: it grows in almost any soil, provided the soil does not hold water stagnant over too long a time. The ground should be well drained. It is not necessary that it should be deep soil for the plant has no tap-root. The coarse fibery roots cannot penetrate into hard clayey soil. It does get along with a minimum of nourishment and water, tenaciously clinging to life under long neglect, but the plant will respond to good treatment, an occasional watering during the hot summer months, and a little fertilizer. Under favorable growing conditions—i.e. fairly loose soil, with leafmold and some plant debris—it will grow many times the size generally seen where it has to live in some out-of-the-way corner, where nothing else will grow.

Bromelia balansae is fairly frost-resistant, depending upon the vigor of the plant, as well as on the length of time it is exposed to temperature below freezing. Without serious damage it tolerates 28°F. although a few white patches may appear on the upper leaf surfaces.

There are numbers of xerophytic and semi-xerophytic plants of similar growing habits that would make agreeable companion plants to *Br. balansae*, for example the hechtias, dyckias, and the showy puyas. All these may be seen at their best from early spring when the days warm up until autumn in the Huntington Desert Garden, San Marino, where Mr. William Hertrich, Curator Emeritus, established them about forty years ago.

COVER PICTURE

Among the exotic plants which tolerate the climatic condition of southern California are the Bromeliads whose curiously beautiful inflorescences are unfamiliar to many lay-horticulturists. The paper on *Bromelia balansae* Mez. appearing in these pages is a careful description of one of the Bromeliads which has gone through a long period of being mis-named, renamed, or both. With the purpose in mind of helping to clarifying some of this nomenclatural confusion, this paper is offered, with habitat and detailed inflorescence illustrated. The cover picture is of a somewhat depauperated plant growing under most unfavorable conditions but holding its own. Without irrigation, overgrown with surrounding plant material (debris removed for photograph), located in one of the coldest, driest areas, it is nevertheless producing an inflorescence. With care the plant might—within a year or two—attain more normal proportions, roughly a five foot spread and matching height, and carrying more than twice as many leaves. The meticulous description in these pages makes the plant come to life at its best.

* * *

Sunday tours at the Arboretum conducted for the enjoyment and edification of public visitors since January have met with gratifying success 12,002 visitors were registered during January and February, 15,000 estimated to March 15th. Tours of the Arboretum's historical area are scheduled each Sunday from 10:30 a.m. to 4:00 p.m. During the week, pre-arranged conducted tours for sponsored groups are offered which take visitors along its finished road system. Arrangements for the latter type of tour may be made by calling the Arboretum office, DOuglas 7-3444.

PLANT INTRODUCTIONS FOR 1954

PHILIP EDWARD CHANDLER

(con't. from Vol. V, No. 1)
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Verbena peruviana (*V. chamaedryfolia*) is an evergreen, almost ever-blooming, perennial prostrate ground cover, with scabrous gray-green leaves 1″-2″ long, oblong or lance-oblong and pointed, sharply serrate or dentate, tapering at the base. The profusion of flowers are scarlet in corymb-like clusters which elongate into short spikes. The plant roots as it spreads, forming a solid mat of furry foliage which bronzes slightly with cold nights. It has long been established on the Vavra estate in Bel Air, and in a few gardens in Santa Barbara, but only this year has it appeared on the market. A native of Peru, southern Brazil, and Uruguay, it was first introduced to various northern botanic gardens. On several slopes where it has been experimentally planted in our own area of southern California, within the past season, it has already taken firm hold and made a presentable carpet. It is not subject to mildew, the common scourge of hybrid verbenas, especially in the fog belt. Like all of its less persistent kin, *V. peruviana* does require hot sun, fairly good drainage, and average moisture although, once well established, it will tolerate drought. Its close-matting habit commends it for holding loose banks, and it is effective in raised planting islands because of a natural propensity to cascade. Harmonious companions of like cultural requirements are *Brachysema lanceolata* and *Helichrysum petiolatum*.

Dracena marginata (*Cordyline marginata*) is one of the most valuable of all silhouette plants, the world around. Never grown extensively in California either under glass or out-of-doors, the plant is now generally available as a small indoor specimen, but few purchasers realize its ultimate pattern value unless familiar with it in tropical countries. Extremely slender stems of rough taupe-gray rise from the ground in multiples, in close arrangement. The narrow concave leaves, to 2′ long, gray-green edged with maroon, form a loose whorl at the end of each branch, and they drop off as new ones appear at the branch terminals. The total composition is a slender line-drawing of vertical to leaning stems topped with ribboned whips. An almost indestructible house plant, it is especially effective against a plain rough wall in sun or shadow. *D. marginata* tolerates much root crowding and neglect; it is equally arresting out-of-doors or indoors, in the former situation and in warmer locations, requiring some protection of shade, some direct sun. A native of Madagascar, this dracaena is not fond of cold nights, but adapts itself to our conditions where some concern for its preferences is exercised. A most effective recent planting of this subject was on a half sunny terrace with a ground cover of *Sedum stahli* (Brown Beans), and masses of *Crassula argentea*.

An almost equally fascinating dracaena is *D. aurea*, a much-branched Hawaiian native with long narrow golden-green leaves (in California), without petioles, clustered at ends of branches where hang (in Hawaii, probably not in California—at least not in the average garden situation) clusters of 2″ flowers and globose golden fruits. In light sun or part shade *D. aurea* has made slow but consistent growth in California, the light, almost succulent ribbon-like leaves, distinctively recurved and faintly lined horizontally. Two ornamentals which will emphasize the fine points of *D. aurea* are *Sedum platyphyllum* and *Dudleya brittoni*.

Continued next issue

Courtesy of "De La Mare Garden Books"

ALFRED CARL HOTTES—A TRIBUTE

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HORTICULTURE lost a unique and dynamic figure with the sudden passing of Alfred Carl Hottes in La Jolla on February 28. His death was the result of a cerebral hemorrhage while hanging pictures at a local gallery.

Mr. Hottes was born at Ithaca, New York, March 16, 1891. He graduated from Cornell University in 1913 and one year later received the Master's degree from the same institution. He served as an instructor in floriculture for two years at Cornell, leaving in 1916 to go to Ohio State University to head up the work in floriculture and ornamental horticulture. At Ohio State he wrote many of his books on gardening,

which sold widely. He built up facilities which laid the foundation of one of the outstanding centers of floricultural instruction and research.

In 1929 Mr. Hottes left Ohio State to join the staff of the Meredith Publishing Company, Des Moines, Iowa, where he was garden editor of "Better Homes and Gardens" until 1942. This was followed by a move to Ja Lolla, California, where he continued to edit garden pages for several national magazines, write and revise books, and to give many lectures on horticultural subjects. As a speaker Mr. Hottes was unusually gifted. His unbounded enthusiasm, and keen sense of humor, coupled with a remarkable memory, made his lectures memorable. He might perhaps have been an outstanding actor.

Mr. Hottes was a born collector and most of these hobby interests were pursued over relatively long periods of time. Many of his writings reveal considerable erudition which came from his unceasing search for unusual and obscure facts related to a subject. He maintained voluminous files on horticultural topics. He had a large stamp collection, and was interested in Japanese prints at one time. Regardless of where he lived, he always had a backyard garden or a greenhouse or lathhouse where many plants were tried. He had a remarkably comprehensive collection of succulent plants at the time of his death. He acquired a particularly valuable library collection of early herbals. He always lived among a multutude of bibelots, which in large part were acquired on his travels in Europe, Mexico, or Alaska.

As a man of unucual versatility and many interests, perhaps it is significant that he was greatly attracted by a number of great figures of art and literature of the Renaissance type such as Leonardo da Vinci, Goethe, Rembrandt, and others and had made a detailed study of their lives.

Unquestionably, the influence of the late Liberty Hyde Bailey at Cornell University* was the guiding inspiration for his career. The books of Mr. Hottes complemented admirably the massive contributions of Bailey, but were oriented toward the amateur and the student, as well as the professional horticulturist. His books on plant propagation, "The Book of Annuals," "The Book of Perennials," "The Book of Shrubs," "The Book of Trees," "Climber and Ground Covers," "Garden Facts and Fancies," "One Thousand and One Garden Questions Answered," and others influenced and guided a whole generation of gardeners and students of horticulture.

He was unucually gifted in sketching, and in later life took up water color painting. He completed many paintings of species of ornamental trees and shrubs grown in California to illustrate a book on the subject. Unfortunately, the cost of publication made the appearance of this volume impossible. It could have been published with line illustrations, but he steadfastly refused to compromise on his original plan for the book.

His personality was essentially complex and he was an individualist and nonconformist. He had a deep insight into human nature, but was tolerant of human foibles. Although he accepted no religious dogmas of any sort, in his later years he gave frequent talks before various church organizations, largely because he was an authority on the customs and traditions of Christmas. The book which he wrote on this subject had a long period of preparation. This particular interest is difficult to explain, but the basic idea of giving was typical of the man. His life was freely given to his many students, to his books, his lectures and other work with characteristic intensity.

Although he never married, he was fond of children and they were instinctively attracted to him. His unusually wide circle of warm friends substituted for family life. His interest in humanity was matched also by a fervent love, not only of plants, but of the larger world of nature. He was one of those unforgettable personalities we encounter all too seldom.

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*See p. 47, current issue, *Lasca Leaves*.

BLUE-FLOWERED NATIVE PLANTS OF CALIFORNIA

P. C. EVERETT

Superintendent of the Rancho Santa Ana Botanic Garden, Claremont, Calif.

VISITORS to Rancho Santa Ana Botanic Garden for many years have often commented favorably upon the naturalistic massing of native annuals, perennials and shrubs. One of the frequent and interesting comments has been regarding the wealth of blue-flowered native plants seen in these displays. This interest has suggested a few remarks which may give ideas to the adventurous gardener who is seeking new ways to create different moods or effects.

Considering the subject of flower color for the garden, especially the lack or abundance of certain colors, it is astonishing to find that from the world floras have come comparatively few blue-flowered plants for cultivation. One can dig through long lists of plants and pick out a large number of shades or hues which might be incorporated under the term "blue" but quickly thinking about what is generally used, the list is not long. Studies made of various world floras indicate that less than ten per cent of the species of the world's plant population are blue-flowered. This rarity of blue flowers has been attributed to the fact that this color is a result of "progressive" mutations which are supposed to be rare.

If one follows the exact science of color, then the California flora could be said to contain rarely any blue-flowered plants. Using the color in its broadest sense in this discussion, it can be stated that we have an extremely rich flora containing blue-flowering plants. Particularly do we find such plants inhabiting the higher mountains, the area west of the Sierra Nevada, and the coastal slopes of southern California. It has been stated that yellow-flowered species are predominant in the desert regions, white in the arctic and sub-arctic regions. Blue flowers are rare in the hot deserts. Our deserts have a number of blue-flowered species, but one can hardly say that they dominate the desert floral scene.

The majority of the blue-flowered species are among the annuals, perennials and bulbous groups; however, there are many blue-flowered shrubs found among the California wild lilacs, sages, lupines, and nightshades. There are no blue-flowered native trees even though some of our native shrubs attain almost tree-like proportions. For the sake of convenience, we will first discuss a few of the most common blue-flowered annuals and bulbous plants, following with the perennials and closing with some of the shrubby plants. Perhaps the easiest to grow of our annuals are the commonly known Globe Gilias, members of the Phlox Family and of widespread distribution in California. These include *Gilia capitata* and *achilleaefolia* and their many varieties, which have finely cut feathery foliage, grow up to 3 feet tall, and are topped with many heads of bright blue to violet flowers. Although they do well in nearly all soil types, they prefer good loams and the seed should be sown in the fall, before the winter rains. Best results are obtained by first loosening the top soil, broadcasting the seed, and then settling the seed by a light raking followed by a thorough soaking. Germination should take place within a week or two If weeded and given an occasional irrigation when rains do not come frequently enough, one should have well-developed plants by early spring. Flowering will continue well into May or even June, if additional irrigations are provided to prolong their blooming. A combination of any of the blue-flowered varieties with poppies, godetias, or the more commonly grown bright orange-colored flowers makes striking pictures in the garden.

In the Waterleaf Family we have the phacelias and nemophilas, both of which are well-known and quite widely grown. Among these is *Phacelia Parryi* having deep violet flowers, *P. viscida* of a rich salvia blue with a white center, *P. minor*

with deep violet flowers in airy clusters, and *P. campanularia,* probably the loveliest of all in this group. The phacelias prefer open, porous soils on the sandy or rocky side and should not be grown in too close proximity to paths. Unfortunately, the plants cause a persistent stain on clothing and when touched they affect many people as does Poison Oak. Also, when grown too closely with other plants, they have a tendency to mildew, especially if given overhead sprinkling. Phacelias are at their best on open, dry hillsides where they can have the full benefit of the sun and the drainage of the slopes. At the Garden most handsome stands have been in light, open or gravelly soils. *Phacelia campanularia* has been one of the most difficult species to germinate, but recently we sowed the seed in a covering of crushed granite and it did beautfully. The plants were well-branched, to 2 feet tall and covered with many large bell-like flowers of the most intense salvia blue shading into white centers. This desert species needs the warmth of inland areas and probably will not do too well in coastal climes unless given the warmest spot possible such as against a garden wall or building where it will get reflected heat.

One of the most charming members of the Waterleaf Family is Baby Blue Eyes or *Nemophila Menziesii.* This loosely spreading annual has quantities of azure blue flowers about one-half inch in diameter. It is best used along pathways or as a foreground plant in contrast with more vivid colors. As a companion, one should try the Spotted Nemophila (*Nemophila maculata*), an inhabitant of the meadows of the central Sierra Nevada. This low flat annual thrives in cultivation, spreading to a foot or more across, and clothing itself with hundreds of white, inch-wide flowers with a deep purple spot at the tip of each petal. Drifts of this species mixed in with Baby Blue Eyes with a background of our native coreopsis (*Coreopsis maritima*) make a very gay picture.

One of the most widespread groups of blue-flowered plants are lupines, comprising many species of annuals, perennials, and shrubs. From seacoast and desert to high mountain tops, from one end of the State to the other, one will find this intrepid plant growing under nearly every conceivable condition. It is interesting to note how few of the lupines have ever been introduced into cultivation. The Russell Lupines, which have been selected from one of our native species, are the only ones commonly grown. Our experience indicates that the lupines would not always be amenable to the usual cultural procedures. However, for dry hillsides or the more open spots of the garden, preferably where drainage is good, there are a number of very lovely species that can be adequately tamed to meet our requirements. *Lupinus nanus* is one of the most useful and commonly cultivated varieties. Seldom growing over eight inches tall and with equal spread, this dainty little plant produces a profusion of rich blue and white flowers. A plant small in stature, the seed should be sown where it will be near at hand and occupy a position of some importance for proper effects. Another species common to our southern California hills, especially in the heavier clay soils, is the Annual Blue Lupine, *Lupinus succulentus,* whose long spikes atop two-foot tall plants turn many dry grassy slopes to a deep blue. California Poppies are a natural component of the scene and the two in combination make an unforgettable picture. Perhaps of even greater beauty is *Lupinus Benthamii,* found in the Tehachapi Mountains, growing abundantly with the California Poppy, turning the brushy slopes to a vivid gold and blue. This species grows from 18 to 30 inches tall, has rich gentian blue flowers with a yellow spot in the center of the standard, arranged closely on long stems reaching well above the main body of the plant. Unfortunately it is rather difficult to grow under cultivation unless one has a porous gritty soil. There are many other species that could be considered, but space limits this discussion to a few examples of what might be expected in this large and varied group containing plants of all sizes and shapes and ranging in colors from deep blues, purples, violets, lavenders, yellows, whites and to all their intermediate shades.

To add further change to the garden, one should consider the broadiaeas, commonly known as Wild Onions, Blue Dicks, Harvest Brodiaea, Grass Nuts, and Ithuriel's Spear. Bulbs or seeds may be purchased from specialists; and colonies will survive for years, if undisturbed by humans and rodents. There are several beautiful species, such as *Brodiaea laxa, coronaria, capitata,* and *californica* which bear large umbels of deep blue to violet-purple funnelform flowers on rather stoutish stems up to 2½ feet tall. Heavy soils that are allowed to bake in the summer months and areas where they are allowed to establish themselves in a naturalistic manner are preferred.

Among the perennial group of blue-flowered plants, we especially recommend the native irises and penstemons. These may be purchased from the specialist nurseryman as growing plants or seed. None of them is difficult to grow, each having very simple requirements. If seed is purchased, it may be sown in prepared open ground or in flats and transplanted to pots and then later to the garden. The iris should have sun nearer the coast and high shade further inland. A good loamy soil is preferred, but other types are found to be acceptable. The most commonly grown native iris is the Redwood Iris, *I. Douglasiana,* and the variously named horticultural varieties, which each year are becoming more popular. There are shades of blue to lavender to purple and even orchid commercially available, while in the wild, one finds a wide choice of colors from almost white to deep purple. What more beautiful picture can one create than to have a broad sweep of the Redwood Iris and the California Poppy? They are in flower at the same time from late March to May, depending somewhat on climatic conditions, and on bright days the effect is quite breath-taking. There are other not so well-known species that fit in well with the Redwood Iris and prolong the flowering season. One, *I. Munzii,* a taller and more robust species from an isolated section in the southern Sierra Nevada, has flowers that most nearly approach a true sky blue. It is easily raised from seed as are most of the native iris, and we hope will become popular with the iris fanciers. *Iris innominata,* a native of Oregon, and an exceedingly lovely yellow species, but highly variable, is being used a great deal in hybridizing with the California iris.

Like the lupines, the penstemons are found in nearly all parts of California. Among the many species is a wide range of the shades of blue, the most noteworthy being *P. azureus, heterophyllus,* and *heterophyllus Purdyi,* all producing a great profusion of rich blue flowers on rather low-growing plants that may spread out to 2 feet. *Penstemon laetus* is a less well-known species that has rich blue to bluish-purple flowers. *Penstemon spectabilis,* often called Blue Beard-Tongue, is a taller and coarser species with long spikes up to 2 feet above a 3-foot plant with equal spread. The large, branching inflorescence is covered with hundreds of lavender-purple flowers with blue lobes, often more or less a deeper blue. All of the penstemons need well-drained soils, preferably of a gritty nature, and should be allowed to be on their own after established. They will do well under general culture, but will live longer when left entirely alone. When used in quantities on a dry hillside, one will be amply repaid for the masses of flowers produced in the later spring and early summer months when one's enthusiasm for gardening tends to lag.

Among the large number of California shrubs there are only about four groups which may be said to have blue flowers. These are the nightshades, some of the members of the Sage Family, the California wild lilacs (*Ceanothus* species), and the semi-woody lupines. The nightshades are quite weedy individuals and need not be too seriously considered. But there is one species, *Solanum Wallacei,* the Catalina Nightshade, which offers some interest. It is an inhabitant of Santa Catalina Island, is a soft shrubby type of plant that attains a maximum size of about 5 feet by 5 feet. It has medium-sized, dark green, somewhat hairy leaves which thickly clothe the plant from early fall to late

spring. During the middle winter months, inch-wide lavender blue to purple flowers appear in clusters of six or more blossoms. In combination with its island companion, *Coreopsis gigantea,* the bright yellow-flowered Tree Coreopsis, and our common component of the soft chaparral, *Encelia californica,* one has a welcome bit of early seasonal color.

The sages contain a number of plants that might be used, but we will discuss here briefly only the salvias and Woolly Blue Curls (*Trichostema lanatum*). There are annuals, perennials, and shrubs listed among the salvias, and nearly all are aromatic and usually have grayish foliage. They are mainly useful for dry hillsides or where one wishes to introduce a gray note for a background picture. Because of their desire to go to sleep during the summer months, one should not grow them in a prominent part of the garden. Probably the most distinctive of the salvias is *S. Clevelandii,* from the dry hills of San Diego County. It has very deep blue flowers borne in whorls on a slender stem to 1 foot or more above a 2- to 3-foot tall plant. The foliage is very aromatic and on warm days a delightful and unmistakable fragrance permeates the air for some distance away from the plants and is the cause of constant inquiries by the visitors as to what is the source of such a distinctive odor.

We think of Woolly Blue Curls or Romero (*Trichostema lanatum*) as one of the aristocrats of the Sage Family. Many long spikes of deep blue flowers clothed with a dense violet wool are borne on a plant to 4 feet tall with equal spread. It, too, prefers dry slopes, but may be satisfactorily raised in a more cultivated area. It may not live quite so long, but it will usually produce enough seed to keep volunteer seedlings coming along. The long spikes are ideal for bouquets and in combination with yellow and orange shades, will be the source of much favorable comment.

The Bush or Tree Lupines are generally unknown in cultivation except by the gardener who has sought out plants that need little care. Ranging in size from 2 to 8 feet tall, with equal spreads, they are useful for filling in among other shrubbery on dry hillsides or other locations where little care is needed. There are several species available under such names as *Lupinus armoreus, longifolius, excubitus, Paynei, Brittonii, Chamissonis* and *mollissifolius*. They have dark green to silvery gray leaves and the flower spikes will rise from 1 to 2 feet above the rounded plant. *Lupinus arboreus* is a woody perennial and is common along the coast. It has deep yellow flowers shading into the blue and lavender tones. Under cultivation, it never seems to be as attractive as one finds it along the seacoast, where it is often confused with Spanish Broom.

The other species of Tree Lupines are very hardy individuals and need dry situations for best results. Growing plants may be purchased or they can be easily grown from seed, either by sowing in a flat or directly into the garden. Soaking in water overnight will speed up the germination. If a little additional irrigation is given and rains are sufficient, mature plants will start to flower within a year. The long flower spikes are covered with pea-like blossoms of varying shades of blue to lavender, orchid and purple. They bloom for three or four months beginning with their first flowers at whatever time of the year they have reached sufficient maturity, but normally in early spring and continuing on through June in our altitudinal range.

So much has been written about the California Wild Lilacs (*Ceanothus*) that it seems superflous to say more. But one cannot write about blue flowers without giving them their due recognition. Certainly of all the shrubs in California, the California Wild Lilacs are the best known and considered by many to be the finest of all our groups of shrubs. More attention has been given them towards developing new and more satisfactory types for our gardens than for any other type of native plant. Sierra Blue, Mountain Haze, Sky Blue, Mary Lake, Royal Blue, Julia Phelps are just a few of the more recent good introductions. Blues in all their glory are personified in the delicate, almost ephem-

eral, flowers that clothe these shrubs in wild abundance. Each year from early to late spring, some part of the California hills from one end of the state to the other is softened to smoky blues or white by the thick clothing of this common constituent of the plant life of our state. To go along with this range in color, is an interesting diversity of sizes and shapes of plants. From the creeping and half reclining forms of the coastal regions to the tall upright forms, we have a wide choice of material for garden usages. Banks, backgrounds, hillside coverings and specimen plants are all there for the choosing. True, some of the species prove to be short-lived in cultivation and have to be replaced, but there are now some of the horticultural varieties that seem to withstand common garden culture. Careful choosing and placement of these varieties will add a new tone to your garden. One that will add color, while evoking exclamations of delight from your garden visitors, and serving as a useful foil for other plants.

In the preceding paragraphs only a very few of the blue-flowered California native plants have been discussed. There are many more possibilities unknown to the gardener which many prove useful in the garden picture. It must be admitted that a great many of our native plants are not for the most prominent parts of our gardens. They need special attention as to proper placement and use in the garden just as do most of the commonly cultivated plants. For difficult situations, dry hillsides or rocky soils with good drainage, there are few plants that can compete, especially where little care and water is the order of the day. And to tie the garden scene together with the cooling and softening effects of the many shades of blue, the California native plants with their soft grays and wide shadings of green foliage, make a welcome addition to the modern garden.

1955 CALIFORNIA INTERNATIONAL FLOWER SHOW

The California International Flower Show at Hollywood Park thrilled its thousands of visitors again on its ten-day run, March 11 through 20. Full facilities of the Hollywood Turf Club and its properties contributed for the event, set the stage for the show housed in the Club House and Pavillion on two floors—7 acres of indoor space. More than 200 feature exhibits were offered by nurserymen, garden clubs, trade groups, florists, cut-flower growers, and educational assistants. This year brought seven individual orchid exhibits, cymbidiums as landscaping material for home gardens with the particular theme of Modern Oriental, outdoor living areas typical of Southern California but adaptable across the nation, exotic tropicals, a garden setting as seen from a neighboring balcony with cascades of azaleas in full bloom, a country garden in the Mediterranean manner showing its influence on suburban living in Southern California, dwarf citrus, an Easter parade by bulb growers of the State of Washington in cooperation with the Chrysler Motor Corporation, a San Francisco cable-car setting, "The Great American Garden," a floral reproduction of an exact scale model of the United States, showing all 48 states and a portion of Canada and Mexico, and perhaps the highlight of all the show, a California Redwood Empire forest scene, with 100 redwood trees picturing the natural plant and wild life of that area, a ranger's cabin, and a mountain waterfall. The educational exhibits this year featured the native flora of California, making altogether another outstanding success of this annual event.

FRED W. ROEWEKAMP

EDITORIAL COMMENT

Lasca Leaves has published the following illustrative and descriptive contributions of Alfred C. Hottes; the illustrations are from his original scratchboard sketches:

Vol. III, No. 3, p. 48: illustration and description of *Leucophyllum texanum.*

Vol. III, No. 4, p. 69: illustration and description of *Helichrysum petiolatum.*

Vol. IV, No. 1, p. 21: illustration and description of *Odontospermum sericeum.*

Vol. IV, No. 2, pp. 36, 37, 38: 2 pages illustrations, brief paper on Fuchsias.

Vol. IV, No. 4, p. 88: illustration, *Kigelia pinnata,* Sausage Tree, complementary to paper on this subject, Vol. IV, No. 3, p. 51.

FIG. 1. Support and dew gauge in position at the 7.5 cm. level above bare soil, Station 1.

DEW RESEARCH AT THE ARBORETUM

LOUIS B. MARTIN

ON THE morning of Dec. 31, 1954, at approximately 7:00 a.m., the final dew deposition observation was recorded. Thus concluded two years of daily dew observations at the first dew research station in the United States.

Dr. Seibert, *Lasca Leaves*, Vol. 3, No. 3, 1953, introduced our readers to the establishment of the dew gauge station and gave a detailed description of the methods and materials involved.

Dr. S. Duvdevani invented and developed the "optical" method of dew observation as it is called. This work was carried out at the Dew Research Station, Karkur, Israel. The fundamental reason for his studies was to find a simple, reliable method for measuring the extremely small quantities of precipitation deposited as dew. The practical reason for this research lies in the province of arid sections of the world.

Early in 1953, Dr. Duvdevani came to the Earhart Laboratories to carry on certain research fundamental to understanding the use of dew by plants. His enthusiasm and rather strong concern for dew research brought about the establishment of the first dew station in the United States at the Arboretum.

MATERIALS AND METHODS

Three stations were set up. Station 1, was over bare soil. Station 2, was over grass covered soil. The four dew gauge levels were: 7.5 cm., 30 cm., 50 cm., and 100 cm. above the soil surface at these two stations. Station 3, over a grass surface, consisted of five levels, 1 meter to 5 meters above the ground, spaced at meter intervals.

A dew gauge is a small piece of specially treated and painted wood, (see Fig. 1). It was exposed horizontally at the various choosen levels. The gauges were set out each evening and read in the morning. Daily readings were summarized at the end of each month. These data, converted to millimeters of precipitation, were used to plot the curves to be presented next.

Results

In Fig. 1, the monthly dew totals in millimeters are plotted along the left ordinate. The monthly rain totals are plotted along the right ordinate. The months of the year are plotted along the abscissa. Note, that the graph for Station 3 begins at the left with July, 1953, and continues to the right through June, 1954.

Station 1 (Bare Soil, '53-'54). The shape of the two curves is quite similar. From Jan. through April, of both years, there was relatively more dew than for any other period of the year. The least deposit occurred between May and July, '53 and between May and Aug., '53. In Aug., '53 and Sept. '54, a second peak occurred. If one were to connect the points for Dec. '53 with those for Jan. '54 and then draw a base line at approximately the 2.0 mm. level, a wave like pattern appears for the dew distribution throughout the year. The frequency of each crest is about three months, as is each trough. The amplitude for any particular crest or trough is similar in both years. The total amount of dew was greater during 1953 than 1954.

Station 2 (Grass Cover, '53). This station consisted of the 30 cm. level only from Jan. to April; however, the curve for the monthly dew totals during this period was similar to the same level of Station E. The curves for the four levels from April to the end of the year, are nearly identical in shape to those of Station 1, but the monthly dew totals, were approximately 0.5 mm. less at Station 2.

Station 3 (1-5 Meters, July '53-June, '54). This was the first attempt ever made to record dew at such heights at one location. Using a base line through the 1 mm. level, crests and troughs appear for the monthly dew total distribution. Here the amounts of dew for the various months compare closely with those of Station 2.

The similarity of pattern of the curves for the three stations was of particular interest.

Dew Gradient

The monthly amounts of dew at each level for any particular station, known as the dew gradient, can be obtained from the curves.

This gradient for Station 1 divides the dew distribution into three periods. First, from Dec. through March, the rainy season, the gradient decreased from the ground upward. In other words, the most dew was deposited near the ground. Second, from April through Aug., no definite

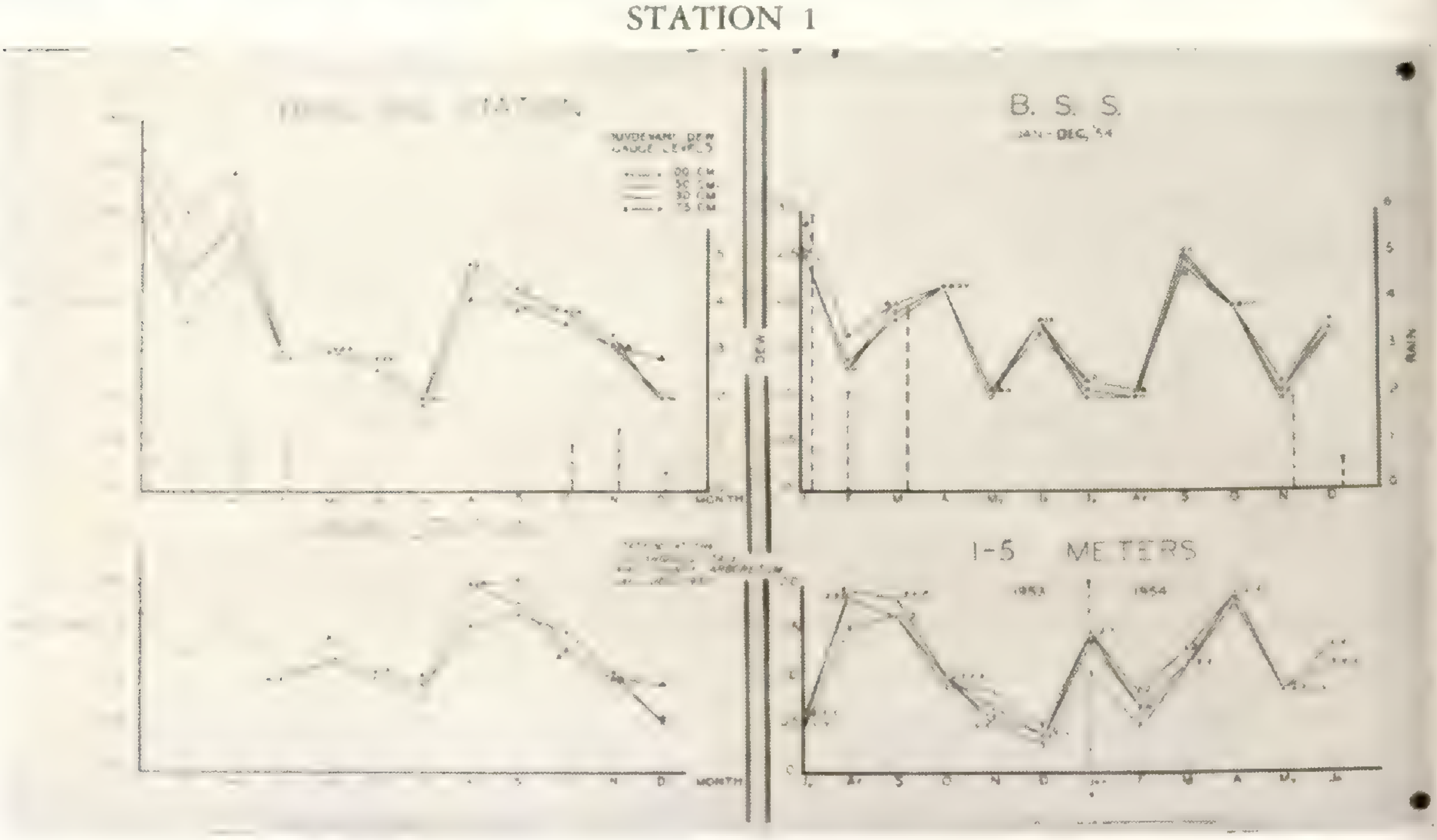

Fig. 2. Graphs of monthly dew distribution for Stations 1, 2, and 3.

direction of the dew gradient was observed; generally, the amounts of dew decreased from the mid-levels toward the two extremes. And third, from Sept. through Nov., the gradient increased from the ground upward. The cycle beginning again with Dec. with increasing dew amounts toward the ground.

The monthly gradients for '53 at Station 2 were similar to those of Station 1.

A somewhat different gradient picture was observed for Station 3. Beginning with July, '53, through Oct. the gradient increased upward. From Nov. '43 through June, '54, the gradient generally increased downward. Thus a two period year was established rather than the three period year as was observed for the other two stations.

Discussion

The Duvdevani "optical" method for measuring precipitation deposited as dew is simple and direct. It can be used anywhere in the world, at any elevation. The most serious fault of the method lies in the cost of the gauge itself. Work by Duvdevani and others is in progress to ease this difficulty.

In Israel, Duvdevani demonstrated that beneficial visible differences occurred in plant structure as a result of exposure to dew. At the Earhart Laboratories he demonstrated that plant leaves could absorb water in the form of a mist, translocate it downward through the plant, to be exuded by the roots into the surrounding growing medium. The relationship between these actions and the physiology of plants still is hidden in future experiments.

The data collected at the Arboretum can serve as additional evidence in furthering dew research in general, as well as, serving as a model station for others in the United States.

We wish to thank Mr. Dewey Nelson and Mr. Jack Fawcett, without whose devotion to reading the dew gauges daily for two years, rain or shine, this report would never have appeared on these pages. We also would like to thank Dr. R. J. Seibert for his interest and counsel during this project.

BIRD NOTES

W. Dan Quattlebaum

The Arboretum seems to be one of the "birdiest" places in Southern California. The total count of species and subspecies is 162. I know of no other local area that can match this number. The Lake attracts many waterfowl. Early November, 1954, a flock of about 100 Baldpate Ducks spent a day on the lake. This is the largest number of ducks that we have seen at one time at the Arboretum.

There are 3 notable features in the bird life, if I may include the Peacock, at the Arboretum. (1) It is one of the very few places, some say the only place, in this country where peacocks are allowed to be "on their own," and to range, roost and nest as they may choose. (2) The resident Red-bellied Hawk is not a *resident* elsewhere in this entire area except along the San Gabriel River near El Monte. (3) The largest "roost" of Red-wing Blackbirds probably in Southern California is at the Arboretum. Almost every evening of the year at least 1000 to 1500 redwings in flocks of 20 to 50 fly in and settle in the cattails and tules to spend the night. After they settle they serenade the departing day with a wonderful "halleluiah chorus." Late one afternoon when a movie was there on location the red-wings seemed confused by the trucks, tents, etc., at the upper end of the lake. So, they began to settle in some nearby high, bare trees. Using my binoculars I estimated that there were some 300 in the top of one tree, and from where I stood the tree looked as if it were full of blackberries.

CALENDAR

The International Geranium Society will hold its annual convention at Santa Barbara, Calif., June 11th and 12th. Headquarters, Mar Monte Hotel. The annual business meeting will be held the morning of the 11th at 11 a.m.; the two afternoons will be devoted to lectures, including speakers William Schmidt of Palo Alto, on the zonal geraniums, Thomas D. Hosmer, scented geraniums, and tentatively, Fred Boddy, Martha Washington pelargoniums, Maria Wilkes on ivy geraniums, and others of equal authority. The convention dinner is planned for the night of June 11th.

California Garden Clubs, Inc., will hold their annual meeting and convention in Visalia, May 5-7, headquarters at Veterans' Memorial Building. It is the 24th annual meeting of the clubs. Miss Dorothy Biddle is the featured speaker.

Southern California Camellia Society holds its last meeting of the 1954-55 season, Tuesday evening, April 12th, at the San Marino Women's Club House, 1800 Huntington Drive. The usual exhibition of camellia flowers brought by members, 7:30-8 p.m. when the meeting is called to order by President Harold Dryden. A new president will be installed at this meeting. No featured speakers, but a panel discussion.

GROWING NOTES

GEORGE H. SPALDING

THE ARBORETUM was presented in 1951 with two plants of a semi-prostrate pyracantha labelled *P. Walderi*. We have been unable to verify the validity of this name to date. An exhaustive search of the literature is being made so we hope to have additional data for a future note in this column.

Several lots of cuttings have been taken at various times of the year. Success in rooting them has been varied and the group placed in bottom heat in July of 1952 gave the greatest percentage of strike.

The illustration shows a group of about a dozen plants of this pyracantha planted near our lathhouse.

It cannot be classed as a true prostrate form as a portion of the new growth is upright. We prune the upright stems off as they appear so that the berries will show off well.

In common with the better forms of pyracantha, it holds its berries for several months. The birds do not seem to like them until they are well aged but can clean a bush in jig time when they start.

No trouble has been experienced to date with insects or disease but the plants are growing vigorously, and are in very healthy condition. What the experience will be under less favorable conditions remains to be seen.

The plants shown are about three years old, 3 ft. in diameter and were well berried in January when the photo was taken. The red berries are large and more orange than red. A red filter was used for this picture to make the berries stand out clearly and gives an accurate view of number of berries per plant.

After four years of observation we feel that this is a very worth while plant and should be more widely used.

Pyracantha walderi growing on the Arboretum grounds, adapting itself in almost exhibit-like perfection to the mound allotted to it. Courtesy of California Arboretum Foundation, Inc.

NAMES, NOTES AND NEWS

ON CHRISTMAS NIGHT there passed away in Ithaca, New York, one of this country's distinguished men. Had he lived until March, 1955, he would have been 97 years old. It helps one realize how long was his span of botanical activity to know that as a graduate student at Harvard University, Liberty Hyde Bailey assisted Asa Gray for two years. Gray died in 1888.

Educated at Michigan State College, Dr. Bailey began his professional career on the faculty of that institution. But it is with Cornell University that his name is universally associated and where his long and active working years were mostly spent. He went there some sixty-five years ago as a member of the faculty in Agriculture, later to become dean and to organize and build up a modern college. Indeed it was largely through his efforts that instruction in agriculture and horticulture was developed in a modern way and that much of the formal work began in fields like plant breeding, plant pathology, and plant physiology. Californians may be interested to learn that later the University of California offered him the deanship of its College of Agriculture, but that he decided to remain in New York state. Dr. Bailey retired as dean at Cornell in 1913.

In addition to achieving eminence as an educator Bailey was so active as a systematic botanist as to make his name endure. During the 1880's and 1890's he published many papers on one of America's most difficult genera, the sedge Carex, including a synopsis of the North American species. He was an authority also on Rubus and gave us monographic treatment of that great complex for this continent. Traveling widely in the American tropics he interested himself in the palms and brought new and more exact methods to their study. In December, 1947, (his ninetieth year) he published a paper on the Indigenous Palms of Trinidad and Tobago which sets a new standard for work in this family.

Dr. Bailey is undoubtedly most widely known for his writings on economic plants. It was his thesis that cultivated plants should be studied and their classification worked out as for wild plants. Beginning at a very early period he grew plants in his own and the University's gardens, not only for breeding work but to learn something about their kinds and forms. After retiring from active administrative work he spent many years in travel and research, building up an herbarium of both cultivated and wild plants. Some years ago he gave his book and plant collections to Cornell University for the founding of the Bailey Hortorium, a place for research and writing, particularly on the systematic botany of plants of horticultural importance. He himself acted as director of this institution until quite recently.

Through the Hortorium's official journal "Gentes Herbarum" many important articles have been published, including papers by Bailey himself on the cultivated brassicas, cucurbitas, and hostas, etc., as well as thousands of pages on blackberries and palms. Still better known are Bailey's books like the Standard Cyclopedia of Horticulture, Cyclopedia of American Agriculture, Manual of Cultivated Plants, and Hortus. There were also innumerable lesser volumes like The Holy Earth, The Gardener, The Gardener's Handbook, How Plants Get Their Names, Manual of Gardening, The Nursery-Manual, The Principles of Fruit-Growing, The Pruning-Manual, The Garden of Larkspurs. The Garden of Pinks, The Cultivated Evergreens, etc.

So we see one man combining in a single lifetime a series of careers (educator, administrator, systematic botanist, horticulturist) any one of which would have earned him permanent fame. Perhaps the most fitting way to remember this great and vigorous man will be as Dean of American Horticulturists.

PHILIP A. MUNZ

NAMES, NOTES AND NEWS

Mr. Victor C. Davies, Managing Director of Duncan and Davies, Ltd., Nurseries, New Plymouth, New Zealand, and Mrs. Davies, spent the afternoon visiting the Arboretum on February 23rd. It is interesting to note that it was through Duncan and Davies that we were able to receive seed of *Microlaena stipioides*, a most promising new lawn grass from New Zealand and Australia, one which shows considerable promise at the Arboretum as a drought-resistant, year-'round green lawn grass.

Arbor Week: the Arboretum was able to accept and carry through Arbor Week ceremonies with the help and generosity of the Los Angeles Garden Club and Las Jardineras. Las Jardineras contributed funds for the purchase of a *Magnolia Campbellii* to add to the growing magnolia collection, a most welcome duplicate of this beautiful Himalayan species hardy only in the South. The Los Angeles Garden Club added to the Arboretum's palm collection with the gift of four specimens: *Livistona mariae, Erythea elegans, Butia capitata,* and *Parajubea cocoides*. The planting ceremony took place on March 4th, at 2 p.m.

Major Albert Pam, of Wormley, England, visiting in this country, honored the Arboretum on February 11th by spending several hours observing development procedures here. As a noted English horticulturist, Major Pam serves on the Board of the Royal Horticultural Society and the John Innes Institute. The genus *Pamianthe* of the Amaryllidaceae family was named after Major Pam within recent years.

National Shade Tree Conference, 31st Annual Convention, Aug. 1-5, 1955: Santa Barbara, California, is the setting of the 31st annual convention of the National Shade Tree Conference, numbering among its 1200 members, workers, scientists, and administrators in the field of arboriculture. Western Chapter members are assisting the National Officers in planning the event. Maunsell Van Rensselaer, Director of the Saratoga Horticultural Foundation, Saratoga, Calif., is General Chairman; co-chairmen are William J. Griffin and Raymond F. Morgan, of Griffin and Morgan Tree Service, Santa Barbara. Committee chairmen are as follows:

Trade Exhibits—Ray D. Hartman, Leonard Coates Nurseries, San Jose; *Education Exhibits*—Lynn M. F. Harriss, Ass't. Supt., of Parks, City Hall, Oakland; *Properties*—Finlay MacKenzie, Supt. of Parks, Santa Barbara; *Safety Demonstrations*—Ross O. McIntire, L. A. Park Dept., City Hall, Los Angeles; *Publicity*—Walter J. Barrows, Supt. of Parks, City Hall, Whittier; *Field Demonstrations*—Dale Griggs, Supt. of Parks, City Hall, Santa Ana; *Transportation*—Ralph N. Harris, Supt. of Grounds, County Court House, Santa Barbara; *Entertainment*—C. F. Holderness, W. S. Rowland Company, 1174 No. Mentor Ave., Pasadena; *Ladies' Program*—Mrs. J. S. Harris, Sec'y., Hemet Park Commission, 234 So. Buena Vista, Hemet.

A tentative program beginning at 2:00 p.m., Sunday, July 31st, 1955, and ending with a trip into Santa Ynez Valleys commencing at 1:30 p.m. Friday, August 5th, has been scheduled and will be announced in detail in the next issue of *Lasca Leaves.* Besides business meetings and social events, including a boat trip and other special features for the women attending, talks on exceptional and informative interest are scheduled. To mention a representative few: Climatology and Ecology of the Pacific Coast, Trees of California (illustrated), Trees of the Pacific Northwest (illustrated), Western Soils Problems, Standards and Ethics, Pruning. Watch for the Summer issue of *Lasca Leaves* (Vol. V, No. 3) for further details.

BOOK REVIEW

De Gardeyne Boke: "A Collection of Quotations Instructive and Sentimental, Gathered and Arranged by Jennie Day Haines, Decorations by Spencer Wright, Published by Paul Elder and Co., San Francisco and New York, 1906." A delightful collection of garden poetry and prose compiled from the writings of many garden lovers. In this age of hurry and health defying stress, we might all go back to recapture some of the philosophy of the Garden as it was felt by the generations before us. What is a garden? A quotation, among the collection offered here, by Cardinal Newman, expressed it superbly: "By a garden is meant mystically a place of spiritual repose, stillness, peace, refreshment, delight!"

RUSSELL J. SEIBERT

The Perennial Adventure. A Tribute to Alice Eastwood, 1859-1953: Susanna Bryant Dakin. California Academy of Sciences, San Francisco, 1954. 48 pp.

Alice Eastwood was a great figure in Californian and west American botany and horticulture and many tributes were paid to her toward the end of her life and since her passing. A redwood grove has been named for her, a picnic ground near the foot of Mt. Tamalpais is called by her name, an Eastwood Hall of Botany is proposed for the California Academy of Sciences where she spent so many constructive and busy years, fifty-seven to be exact. One of the most illuminating and interesting printed documents that has yet appeared about this notable woman is the little volume prepared by Mrs. Dakin. It catches Miss Eastwood's spirit and in a charming way makes her a very real figure, telling of her forthrightness, her indomitable spirit, her decisiveness, and yet of her modesty and very human qualities. The actual account of her life is all too short, a good portion of the volume being devoted to one of Miss Eastwood's more than 300 papers. This one is entitled "Early Botanical Explorers on the Pacific Coast and the Trees They Found There."

Two excellent portraits are included showing Miss Eastwood in both her younger and her later years.

PHILIP A. MUNZ

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Close-up view of blossoms of a specimen of *Chorisia speciosa*, usually so high above ground that their detailed beauty goes unobserved. A branch from the tree described by Dr. Ayres on the opposite page as situated in the Stone Canyon area, Bel Air, California. Photograph, courtesy of Ralph D. Cornell, Landscape Architect.

CHORISIA TREES IN SOUTHERN CALIFORNIA

SAMUEL AYRES, JR.

Chorisia speciosa—Auto Club grounds.
Courtesy, Ralph D. Cornell.

CONSIDERING THE FACT that it is one of the world's most beautiful flowering trees and has proved its suitability to Southern California's climate, it is surprising that these trees are practically unknown in this area. There are probably not more than half a dozen mature chorisias in all of California and it is doubtful if more than one person in many thousands has ever seen or heard of one.

I first became aware of this tree about fifteen years ago, when during a visit to Evans and Reeves Nursery, I inadvertantly overheard Mr. Hugh Evans extolling the virtues of the tree in Bel Air to a customer. The drive home naturally included a side trip up Stone Canyon Road to the Administration Building of the Bel Air subdivision, now the Bel Air Hotel. Looming above the patio wall of this Spanish colonial type building was a magnificent bouquet of rose-pink hibiscus-like flowers such as one might conjure up in a dream. The tree was tall and straight with a green trunk studded with formidable looking spines. Only the leaves on the lower branches remained, setting off to advantage the cloud of pink blooms above.

After recovering from the shock of this impact with beauty, the first reaction was: Are there any more trees like this in the Los Angeles area, and if not, why not? Why aren't the streets in Los Angeles lined with these trees?

There are a few other chorisia trees in this area, the best known being the one in the rear parking lot of the Automobile Club of Southern California at Adams and Figueroa Streets. This tree had been planted in a private garden before the property was acquired by the Automobile Club. Fortunately someone knew the value of the tree before the garden was converted into a parking lot. The Auto Club tree is not quite as tall as the Bel Air tree with its approximately 75 feet of grandeur and is slightly different in several respects. It has fewer spines on the trunk, is completely bare of leaves when in bloom and the flowers are a darker rose with a white star-like center.

The history of both of these trees is lost in antiquity. Mr. Hugh Evans thinks that the Bel Air tree was planted about 50 years ago by Peter Barnhart, a well known horticulturist of the era for Mr. and Mrs. Danziger who then owned the property.

Until recently another tree was growing on the grounds of the Veterans' Hospital in Sawtelle but this one apparently died of neglect. A chorisia which Mr. Evans planted in his old garden on 24th Street in Santa Monica about 30 years ago is still growing although on account of shallow soil is not as vigorous as the others. About seven years ago I received from my neighbor, Mrs. Clifford Argue, some chorisia seeds which had been collected in Brazil by Reid Moran, a botanist on the staff of the University of California at Berkeley. From these seeds I succeeded in growing two plants, one of which is now thriving

in our own garden in La Cañada and is about 15 feet tall although it has not yet bloomed. The other was given to the Los Angeles State and County Arboretum where it is well established and from which a number of additional trees have been propagated by cuttings.

Several days ago I learned for the first time about another mature chorisia tree in Pomona in the garden of Dr. and Mrs. W. G. Stahl. Dr. Stahl says that the tree was in the garden when he acquired the property about ten years ago and is probably about 42 years old. Mr. and Mrs. Elmore Menninger of Arcadia have a young chorisia about nine years old which bloomed this past winter for the first time.

Botanically speaking, the classification of the chorisia is somewhat confused. The genus is a member of the Bombax family (*Bombacaeae*) and is closely related to the Ceibas (kapok tree). There are two principle species of chorisia. *Chorisia speciosa* or showy chorisia is the species described above. It is native to Brazil and Northern Argentina and is sometimes called the floss-silk tree because of the silky material to which the small pea-like seeds are attached when the seed capsule opens. There is apparently considerable variation in individual plants within this species, especially with respect to the shape and color of the petals. E. A. Menninger, Florida's "flowering tree man" has carried out a great deal of research on the classification of chorisias and has written a valuable monograph on the subject which has been reprinted from the Proceedings of the Florida State Horticultural Society held in St. Petersburg, November 5, 6, 7, 1952.

The other principle species of this genus is *Chorisia insignis* which comes from Argentina. This species also is subject to some variation but in general the tree is somewhat less attractive than *Chorisia speciosa,* has a somewhat bottle-shaped trunk and flowers which are commonly white or cream colored with brownish splotches near the center. Because of the peculiar shape of the trunk it is known in Spanish speaking countries as "Palo borracho" or drunken tree. The name has also been applied to *Chorisia speciosa* which may have a slight enlargement of the lower portion of the trunk but which is usually tall and straight. In Brazil the chorisia is called Paineira.

There are at least three mature specimens of *Chorisia insignis* in California: one in the UCLA Botanic Garden in West Los Angeles which withstood a low temperature of 18° in 1949, one in Elysian Park in Los Angeles which is probably *Chorisia insignis* and which according to Frank Shearer, former Superintendent of the Los Angeles Park Department, was obtained from the Plant Introduction Service of the U. S. Department of Agriculture and was planted about 50 years ago, and one in the Huntington Botanic Garden in San Marino which is twelve years old and which has bloomed twice. According to Donald Woolley, Superintendent of the UCLA Botanic Garden, the tree there which was formerly erroneously labelled as a Ceiba, has been positively identified by recent visiting Argentinian botanists as *Chorisia insignis* and is indigenous to dry pampas plains. This may explain the function of the disproportionately enlarged trunk as a storage reservoir for water to carry the plant through a dry season. Mr. Woolley said that this tree was obtained from the U. S. Experiment Station in La Jolla and was planted in 1936 by Dr. A. M. Johnson and Mr. George Gruenewegen (see page 61).

Menninger mentions two other species of chorisia which he says have not been grown in the United States: *C. crispiflora* from the coastal areas of Brazil and *C. soluta* from Guatemala.

Chorisia speciosa is probably the showiest and at the same time the best suited for ornamental planting in Southern California. The tree grows rapidly and in rich soil and a protected location will ultimately attain a height of 60 to 75 feet as exemplified by the Bel Air tree. Its first flowering usually occurs when it is eight to ten years old. The blooming period is from October to January with the peak occurring the latter part of November and the first week or two of December. As

stated before, there is considerable variation within the species as to the size, shape and color of the flower and this is discussed in considerable detail in Mr. Menninger's monograph. In general, the flowers are large, with petals 4 to 5 inches long, somewhat resembling the appearance of a hibiscus. There are 5 petals which may be either wide or narrow, widely open or even backward flaring, and the color may vary from pink to deep rose with various markings and exceptionally may be almost white or purplish.

Some trees drop only their upper leaves when in bloom (the Bel Air tree) while others are completely deciduous when in bloom such as the Auto Club tree. Thorns are a variable feature. Among the 400 trees which were grown at the Arboretum, most of them had stiff spines on the lower portion of the trunk although some were nearly thornless and a few were excessively armored. Apparently an excessive development of thorns robs the tree of energy for growth since the very thorny ones were invariably shorter than the rest. If the trees are to be planted in locations where thorns are undesirable, they can easily be scraped off and do not injure the tree.

Chorisia speciosa likes a rich soil and a fair amount of water, whereas *Chorisia insignis* is apparently better off without too much water. Both trees will tolerate occasional mild frost and will withstand fairly heavy occasional frost when established, but it would be unwise to plant them in areas in which the winter temperature habitually drops below 28°.

The few chorisia trees in the Los Angeles area rarely set seed, and this is especially true of *Chorisia speciosa*. Furthermore the seeds lose their viability within a matter of weeks and in the past it has proved difficult to propagate plants from cuttings. Dr. Russell J. Seibert, until recently Director of the Los Angeles State and County Arboretum, stated by using cuttings from young trees, vegetative propagation is now fairly simple, whereas cuttings from mature trees usually fail to root. This probably accounts for the scarcity of these trees in this area.

I was fortunate in being in Brazil and Argentina nearly two years ago when the chorisias were in seed and I was able without difficulty to obtain many seeds especially through the courtesy of Dr. H. P. Krug of the Forestry Service in São Paulo and Mr. Martin Broen, Director of the Botanic Garden in Buenos Aires. Most of these seeds were sent by air mail directly to the Los Angeles State and County Arboretum and were planted immediately. The germination was almost 100 per cent and approximately 400 plants of *Chorisia speciosa* were grown. About 50 of them are planted on the Arboretum grounds, 20 or more on Baldwin Avenue in front of the Arboretum and trees have been distributed to various communities in Southern California, including Los Angeles, Pasadena, San Diego, Long Beach, Santa Barbara and Los Angeles County. Beverly Hills has planted 80 chorisias, most of which were obtained from the Arboretum, in the center parkway of Sunset Blvd. which was formerly a bridle trail. Thus ends the era of scarcity of chorisias in Southern California.

COVER PICTURE

When the *Los Angeles State and County Arboretum* opened its grounds to the public in January, 1955, the convenience of touring the grounds on wheels was offered as a necessity toward the visitor's full pleasure and enjoyment of the grounds and historical buildings. So extensive is the acreage that to travel it on foot would be a likely hardship for all except seasoned hikers. Appreciation of what is to be seen would also be curtailed if the visitor were to wander about into either the finished or unfinished areas. Consequently, Historical Curator Dewey Nelson, and his knowledgeable aides, are engaged to conduct weekend visitors through the grounds on the "train." Our cover picture shows its capacity and evident efficiency. In the foreground appear handsome old specimens of multiple stands of eucalyptus on the premises, the species *E. globulus* ably written about in the third issue of *Lasca Leaves* in the spring of 1951 (I.3.18), by the late Charles Gibbs Adams, Landscape Architect.

* * *

ANNOUNCEMENT

An Index to the first five volumes of *Lasca Leaves* is scheduled to appear in the Autumn issue, 1955, Vol. V, No. 4. If any horticultural or botanical groups, societies, institutions, clubs, wish their names to appear for reference value in this Index, they must be in the editor's hands by August 15th (Box 688, Arcadia, Calif.).

THIRTY-FIRST NATIONAL SHADE TREE CONFERENCE 1955

WALTER J. BARROWS, *Editor,* Western Chapter Newsletter

FOLLOWING the official opening of the 31st annual meeting of the National Shade Tree Conference, by President Carl Fenner, at 10:00 a.m. on August 2, 1955, in Santa Barbara, Calif., an address of welcome will be made by Newton B. Drury, Chief of the Division of Beaches and Parks, State of California. Mr. Drury has been serving the state of California in this capacity since 1951. Prior to that time, he was director of the National Park Service for eleven years, and has long been active on the Save-the-Redwoods League, serving as secretary of this organization for some twenty years. He is currently corresponding member of the American Society of Landscape Architects, and trustee of the National Trust for Historic Preservation. Mr. Drury has always evidenced a real interest in trees and their care.

Another distinguished speaker of the opening session will be Brian O. Mulligan on the topic, "Shade and Streetside Trees of the Pacific Northwest" to be illustrated with Kodachromes. Currently director of the University of Washington Arboretum, Mr. Mulligan was formerly horticultural advisor to the Air Ministry, London, England, and prior to that was assistant to the director of the Royal Horticultural Society's Gardens, of which he is also a graduate.

Dr. W. H. Chandler, Professor of Agriculture, Emeritus, University of California at Los Angeles, whose fifty years of activity in this field have inspired his lectures, has taught at many universities, among them the University of Missouri, Cornell, and University of California at Los Angeles. Dr. Chandler's instructive and practical booklet, "Pruning Ornamental Trees, Shrubs, and Vines," published as Agricultural Extension Service Circular No. 183, was written in collaboration with Mr. Ralph Cornell and contains information of great value to students and professional practitioners alike. Dr. Chandler has been honored by election to the National Academy of Sciences, and given the Charles Reed Barnes Life Membership in the American Society of Plant Physiologists. Dr. Chandler will speak on the "Training of Young Trees."

One of the significant panels of the Conference will be that on City Planning, "Consider the Trees," which will be conducted by Walter L. Doty, Director of Editorial Research, Sunset Magazine, Menlo Park, California. One of the out-of-state members of his panel will be Noel B. Wysong. Mr. Wysong, after having served seven years in the Department of Forestry, National Park Service, Department of the Interior, became affiliated with the Forest Preserve District in March, 1939. He is active in many professional groups, and has served as president of the National Shade Tree Conference, the Midwestern Chapter of NSTC, and the Midwest Institute of Park Executives. He is also member of the American Association of Economic Entomologists, the Illinois Technical Forestry Association, and the American Phytopathological Society.

Ralph D. Cornell, a second participant in Walter Doty's panel on city planning, and long-time member of the National Shade Tree Conference, is the author of the unique work, "Conspicuous California Plants." He has been contributor over a period of years to *California Arts & Architecture, Asia, Golden Gardens,* and other horticultural publications. Mr. Cornell is a trustee and sustaining member of the Los Angeles State and County Arboretum Foundation, and is also on the Board of Governors. Among his outstanding landscaping achievements is the three and one-half year work program for the AEC at Los Alamos for erosion control and landscaping within the city of Los Alamos. The grounds of many public buildings in

the Civic Center of Los Angeles have been landscaped by Mr. Cornell, among them the Los Angeles County Law Library, and Los Angeles County Courts Building. Master plans for Griffith Park and Elysian Park have also come from the office of Mr. Cornell.

Mr. Robert Royston, another outstanding California landscape architect, will also work with Mr. Doty on the City Planning panel. Formerly holding professorships with the University of California and North Carolina State College in Landscape Architecture and design, Mr. Royston is now with the firm of Eckbo, Royston, and Williams, Landscape Architects. The work of his firm is known nationally and internationally; San Francisco International Airport is one of the major projects on which the firm has been consulted. It is also well-known for the recreation center for employees of the Standard Oil Company in Richmond, California, and the St. Mary's Square Park, just completed. Eckbo, Royston and Williams are also designers of the landscape of the new Civic Center of Whittier, California.

Among the valuable features of any annual meeting of the National Shade Tree Conference, are the educational exhibits. There will be featured under the direction of Lynn M. F. Harriss, Chairman of the Educational Exhibits Committee, exhibits depicting the care of existing trees. Two exhibits devoted to producing better trees for various purposes will include a display by the Association of Landscape Architects on the "Use of Living Trees in Appropriate Sites." A display of the native trees growing in the Western States will be sponsored by the Save-the-Redwoods League. The Santa Barbara Park Department in cooperation with the Santa Barbara Botanic Gardens, will set up an exhibit of trees introduced in the West, and an exhibit emphasizing climate control through the use of trees and other plants is being planned by the Department of Landscape Management of the University of California at Davis.

For the ladies, a series of interesting, but not exhausting, activities has been programmed by Mrs. Elizabeth Harris and her committee, the members of which are working closely with the Transportation and Hospitality Committees so that all of the wives who will accompany their husbands to this conference will find their time profitably and pleasantly filled.

These are but a few highlights of a conference that will be of immense interest to all who value ornamental trees and are concerned with the fostering of an ornamental shade tree program. Subjects encompassed by such a program are very wide in range, consequently any meeting of the National Shade Tree Conference must explore many related topics.

Climatology and ecology, arboriculture as an industry, streetside trees, a utility conference on street trees, training of young trees, botanical gardens and arboretums, ethics of arborists, municipal forestry, and city planning are all on the agenda for this conference.

In addition there will be educational exhibits, commercial exhibits, demonstrations of commercial equipment, and safety demonstrations that will be of major interest to all the delegates.

A most cordial welcome is extended to all tree lovers whether as private garden owners, commercial gardeners, arborists, plantsmen, or scientists and teachers. Why not plan on attending one or more of the sessions in beautiful Santa Barbara, California, August 1-5, 1955, at the Mar Monte Hotel?

CALENDAR SOLICITATION

Plant Societies: Please made note that the Calendar column is designed to accommodate horticultural and botanical plant societies, as well as our general readers, by listing data concerning place and date of meeting, program subject, and other pertinent subject matter, within the quarterly period covered by issue of *Lasca Leaves*, January 1st, April 1st, July 1st, and October 1st. Press dates (when typed copy should be in the hands of the Editor) are the first of each month preceding the date of issue. Data required: official name of the organization, date and place of meeting, (subject announcement optional), the name, address, and telephone, of the person responsible for release of copy for publication. Send to: Plant Societies' Editor, Box 688, California Arboretum Foundation, Inc., Arcadia, Calif.

VEITCH'S NURSERY

Pioneer Hybridizers of Tuberous Begonias

(Concluded from Vol. V. 2.29)

ELMER J. LORENZ

Two more varieties named *Begonia x* Mrs. Charles Scorer and *B. roseo-superba* were distributed during 1880. *Begonia x* Mrs. Charles Scorer was produced by crossing *Begonia x* Viscountess Doneraile with another seedling and described as "a splendid variety with large well-formed flowers of a brilliant glowing crimson-scarlet, unequalled in this particular shade of colour by any Begonia of its class. The plant is of robust habit, free-flowering and vigorous, furnished with a neat dark green foliage, which, together with brilliant flowers, render it one of the best Begonias yet obtained."

The variety *Begonia x roseo-superba* resulted from a cross of *B. rosaeflora* and an unnamed seedling. The flowers were described as being of a "clear bright rose-colour suffused with white, at that time a unique tint among Begonias."

In Veitch's Plant Catalogue of 1881 are mentioned an additional two varieties named *Begonia x* Admiration and *Begonia x* Viscountess Doneraile. *Begonia x* Excelsior crossed with *B. davisii* resulted in the begonia plant named *Begonia x* Admiration which showed the influence of the latter parent in its dwarf, compact habit and vivid orange-scarlet flowers.

Begonia x Viscountess Doneraile is considered one of John Seden's most brilliant hybrids and was produced from crossing two other hybrids, *Begonia x* Monarch and *Begonia x sedenii.* "The flowers, on stout erect scapes, well above the light green leaves, were freely produced, and rich vermillion-red in colour."

"Hortus Veitchii" also notes that "an important role played by this variety (*Begonia x* Viscountess Doneraile) was its use in connection with *B. socotrana* in the production of that entirely new and remarkable race of begonias which has become such a popular winter-flowering section, and of which the variety John Heal was the first to be distributed."

In 1882 the results of an experiment to produce dwarf compact plants for bedding or for pot culture was mentioned. Two varieties were listed for distribution and were named *Begonia x* Miss Constance Veitch and *Begonia x* Mrs. Arthur Potts. These successful crosses resulted from experiments with the dwarf Andean species, *B. davisii.*

John H. Veitch mentions "with the introduction of this dwarf race of Begonias Seden ceased experimenting. The hybrids produced had become widely distributed, and many hybridists, both in England and on the Continent, had engaged in the work of improvement, and new varieties appeared each year, but the eighteen hybrids, with the five original species introduced by Messrs. Veitch, form the foundation of Begonias of today."

Down through the years hybridizers have worked on the tuberous begonias, constantly changing and improving their form, color, and beauty, until they have reached the exceptional beauty of today. The tuberous begonias can truly be called the Queen of the Flowers. Hybridizers are not only active in the United States, but in England and on the Continent as well. The names of hybrid tuberous begonias are now legion. In "How to Grow Begonias" by G. A. Farini, printed about 1899, there are fifty-nine pages of names and descriptions of tuberous begonias!

With the introduction of *B. socotrana* Hook. f. a new and important variety of begonia hybrid emerged which was called the "Winter Flowering Varieties," or as now more commonly called "The Christmas-Flowering Varieties."

Professor Balfour, of the Edinburgh Botanic Gardens is credited with introducing this important Begonia. It was dis-

covered during a botanical exploration in Socotra, a small island off the Arabian coast, in the Indian Ocean, and in "one of the most improbable places in the world in which to find a Begonia." *B. socotrana* was sent, among other plants, to Kew in April in 1880, and produced plants which flowered in December of the same year. The stock of *B. socotrana* passed into Messrs. Veitch's possession and was distributed in 1882. The unique characteristic of *B. socotrana* is its mid-winter habit of freely producing flowers of a bright rose. Hybridizers at once recognized the possibilities of combining *B. socotrana* mid-winter flower habits with the varied colors of the large summer flowering tuberous begonias, and extending the flowering period over practically the whole year.

Although several hybridizers began work immediately, John Heal is given the credit for producing the first hybrid in which *B. socotrana* was one of the parents. He crossed *B. socotrana* with *B. incarnata* (*B. insignis*, during Veitch's time), a Mexican species, and the resulting hybrid was named *Begonia x* Autumn Rose, "from the colour of the flowers and in allusion to the flowering season." It was never distributed commercially.

The first hybrid of this type to be distributed was *Begonia x* John Heal, a cross between *B. socotrana* and *Begonia x* Viscountess Doneraile (being the pollen plant). *Begonia x* John Heal first flowered in 1883. Only one seedling was obtained from the cross, and all the plants distributed were produced from this one plant. Distributed in 1885, it occasioned

BEGONIA "ACME."

Price 10*s.* 6*d. each.*

For full description, *see* page 19.

the following interesting remarks: "It is still largely grown (in 1906) as a winter-flowering decorative subject, the neat, compact habit of growth, rich rosey-carmine flowers gracefully borne in terminal panicles, and bright emerald-green leaves, combine to make a useful plant for the decoration of the table or conservatories."

This was followed by crossing an orange-flowered tuberous variety with *Begonia x* John Heal. This progeny was named *Begonia x* Adonis and was noted for its increased size of the flower, up to three inches in diameter. The color of the flower was described as being a bright scarlet to red with carmine. It was first distributed in 1887.

Pollen from a very dark crimson tuberous variety was placed on a female flower of *B. socotrana* and the resulting plant was named *Begonia x* Winter Gem. It is mentioned as being "in habit resembling *Begonia socotrana*, dwarfer and more compact, the leaves smaller and neater. The flowers, darkest of all the group, are rich deep crimson, 2 to 2½ inches in diameter, held erect on stout peduncles well above the foliage."

Several varieties followed from a single seed pod resulting from the pollen of *B. socotrana* being placed on the female flower of a semi-double rose-colored tuberous variety. The varieties were named *Begonia x* Ensign, *Begonia x* Winter Perfection, *Begonia x* Ideala and *Begonia x* Success. These flowered for the first time in 1891 and each differed from the other in leaf, size, and color of the flowers.

"Ensign, exhibited for the first time in November 1896, was the first of this group to be distributed. The flowers are semi-double, of a pleasing shade, of light rose-carmine, with the petaloid stamens yellow or yellow-green, and the foliage intermediate between that of the two parents.

"Winter Perfection, a taller-growing form, produces semi-double rose-pink flowers, the outer petals spreading, the metamorphosed stamens remaining in various stages of development, the outer ones rose-pink, and the inner more or less streaked yellow.

"The variety Success also rather tall-growing, bears numerous semi-double flowers fully 2 in. in diameter, and in colour bright carmine toned with scarlet; the petaloids are yellow tipped with green.

"The most distinct is the variety Ideala —unusually neat and compact, some 9 in. in height; the flowers large for so small a subject, are semi-double, of a brilliant rose-colour, freely produced."

During the same year (1896) the pollen from *B. socotrana* was placed on the flower of a single scarlet-flowered variety. Three plants were selected for distribution from the resulting seed capsule and they were named *Begonia x* Mrs. Heal, *Begonia x* Myra, and *Begonia x* Winter Cheer. *Begonia x* Mrs. Heal was considered the finest and most distinct, having flowers two to three inches in diameter and of a brilliant rose-carmine toned with scarlet. The flowers were freely produced and "gracefully disposed."

The leaves of *Begonia x* Winter Cheer resembled those of *B. socotrana* and the semi-double flowers are of a pleasing shade of rose-carmine. *Begonia x* Myra, the third variety of the set, produced single flowers of a bright rose-carmine.

With the crossing of *B. socotrana* and a semi-double white variety as the seed bearer, a decided break in color was obtained. Two distinct varieties were selected to be named *Begonia x* Julius and *Begonia x* Sylvia. *Begonia x* Julius is described as being of "the most distinct of any in point of colour, a rose-pink suffused with white, and flowers more truly double than those of any other of the section." *Begonia x* Sylvia "has semi-double rosey-carmine flowers 3 in. in diameter, which open in a peculiar flat manner."

Two other hybrids, *Begonia x* Agatha and *Begonia x* Agatha *compacta* followed in 1903. *Begonia x* Agatha resulted from a cross of *B. socotrana* with a hybrid grown under the name of *Begonia x* Moonlight, which in turn was the result of a cross between *B. pearcei* and *B. dregei*. *Begonia x* Agatha "is not only a charming garden plant, but interesting, as the flowers closely resemble those of Gloire de Lorraine, a hybrid raised by M.

Lemoine of Nancy from the supposed cross-fertilization of *Begonia socotrana* and *Begonia Dregei.*" James Veitch further states "the correctness of the supposition is confirmed by the close resemblance between the two plants—Agatha showing a slight difference in the shape and colour of the leaves, as well as in a more compact growth, features probably due to traces of *Begonia Pearcei* in its composition."

Begonia x Agatha *compacta* is a dwarf form of *Begonia x* Agatha and resulted from the cross of two species, *B. socotrana* and *B. natalensis. B. natalensis* is a small white-flowered species from South Africa, and resembles *B. dregei.*

The flowers of *Begonia x* Agatha *compacta* "bear a close resemblance to those produced by *Begonia x* Agatha, but are of a deeper shade of rose, and slightly larger. The great distinction, however, lies in the compact habit, unusually dwarf and near, requiring no tying to make a shapely plant, as in the case of Gloire de Lorraine."

Contemporary begonia authorities have placed the begonia hybrids resulting from the crossing of Andean tuberous species under the class of *B. tuberhybrida.* The winter-flowering begonias resulting from crossing *B. socotrana* and the Andean tuberous species or their derivatives are placed in the group of *B. heimalis,* and the hybrid begonias resulting from the cross of *B. socotrana* with *B. dregei* are placed in the group *B. cheimantha.*

The following list will give at a glance the 18 begonia hybrids raised by John Seden, the order in which they were produced, name of the begonias, parents, and date of introducton to commerce:

Order in which the hybrid was raised:	NAME	PARENTS	Date of introduction to commerce:
1.	*B. x sedenii*	(*B. boliviensis x* unnamed species)	1870
2.	*B. x intermedia*	(*B. boliviensis x B. veitchii*)	1872
3.	*B. x chelsoni*	(*B. boliviensis x B. sedenii*)	1871
4.	*B. x* Stella	(*B. x sedenii x B. veitchii*)	1874
5.	*B. x* Vesuvius	(*B. clarkei x B. sedenii*)	1874
6.	*B. x* Excelsior	(*B. x chelsoni x B. cinnabarina*)	1875
7.	*B. x* Model	(*B. x sedenii x B. pearcei*)	1875
8.	*B. x* Acme	(*B. x intermedia x B. sedenii*)	1876
9.	*B. x* Monarch	(*B. x sedenii x B. x intermedia*)	1878
10.	*B. x* Viscountess Doneraile	(*B. x* Monarch x *B. x sedenii*)	1881
11.	*B. x* Mrs. Charles Scorer	(*B. x* Viscountess Doneraile x B. seedling)	1880
12.	*B. x* Emperor	(*B. clarkei x B. x chelsoni*)	1877
13.	*B. x* Kallista	(*B. x sedenii x B. x* Stella)	1876
14.	*B. x* Queen of the Whites	(a sport of *B. rosaeflora*)	1878
15.	*B. x* Admiration	(*B. x* Excelsior *x B. davisii*)	1881
16.	*B. x roseo-superba*	(*B. roseaflora x B.* seedling)	1880
17.	*B. x* Miss Constance Veitch	(*B. davisii x B.* seedling)	1882
18.	*B. x* Mrs. Arthur Potts	(*B. davisii x B.* seedling)	1882

SUMMARY

The tuberous begonias species and their resulting hybrids referred to in this article were first described and illustrated during Veitchs' era in the following botanical reference material:

Begonia boliviensis A. DC. Gard. Chron. 1867, p. 544, fig.; Bot. Mag., t. 5657; Fl. Mag. 1867, t. 354.
Begonia pearcei Hook. f. Bot. Mag. t. 5545; Veitch's Catlg. of Pl. 1866, col. pl.
Begonia veitchii Hook. f. Gard. Chron. 1867, p. 734, fig.; Bot. Mag. t. 5663; Fl. Mag. 1867, vol. vi, pl. 365.
Begonia rosaeflora Hook. f. Bot. Mag .t. 5680; Fl. and Pom. 1869, col. pl. p. 1.
Begonia davisii Veitch. Hort. Veitch; Bot. Mag., t. 6252; Fl. Mag., t. 6252; Veitch's Catlg. of Pl. 1879; fig.; The Garden, 1878, vol. xiii, p. 208, pl. 118.
Begonia clarkei Hook. f. Bot. Mag. t. 5663 et t. 5675; Veitch's Catlg. of Pl. 1868, fig.
Begonia cinnabarina Hook. f. Bot. Mag. t. 4483.
Begonia x sedenii Hort. Veitch's Catlg. of Pl. 1870, col. pl. and fig. p. 4; Fl. and Pom. 1869, p. 169, col. pl.
Begonia x chelsonii Hort. Veitch's Catlg. of Pl. 1871, col. pl. and fig. p. 2.
Begonia x intermedia Hort. Veitch's Catlg. of Pl. 1872, pl. 2, fig.; Fl. Mag. Feb. 1872.
Begonia x Stella and *Begonia x* Vesuvius. Veitch's Catlg. of Pl. 1874, pp. 4, 5, figs.
Begonia x Excelsior and *Begonia x* Model. Veitch's Catlg. of Pl. 1875, pp. 4, 5, figs.
Begonia x Acme. Veitch's Catlg. of Pl. 1876, p. 6, fig. The Garden, 1878, vol. xiii, pl. 118.
Begonia x Kallista. Veitch's Catlg. of Pl. 1876, p. 7, fig.
Begonia x Emperor. The Garden, 1878, vol. xviii, p. 208, pl. 118; Fl. Mag. 1876, t. 194.
Begonia x Monarch. Veitch's Catlg. of Pl. 1878, p. 8, fig.
Begonia x Queen of the Whites. The Garden, 1878, vol. xiii, p. 208, pl. cxviii; Veitch's Catlg. of Pl. 1878, p. 9, fig.; Gard. Chron. 1877, Dec. 15, col. pl. fig. 4.
Begonia x Mrs. Charles Scorer and *Begonia x roseo-superba.* Veitch's Catlg. of Pl. 1880, p. 6, 7.
Begonia x Admiration. Veitch's Catlg. of Pl. 1881, p. 49, fig.
Begonia x John Heal. The Garden, 1889, vol. xxxv, p. 218, col. pl. 691.
Begonia x Winter Gem. The Garden, 1891, vol. xxxix, p. 504, col. pl. 807.
Begonia x Ideala. Gard. Chron. 1901, vol. xxx, p. 411, fig. 124.
Begonia x Mrs. Heal. Gard. Chron. 1895, vol. xviii, p. 585, fig. 101.

Abbreviations used in the above list of references refer to the following:

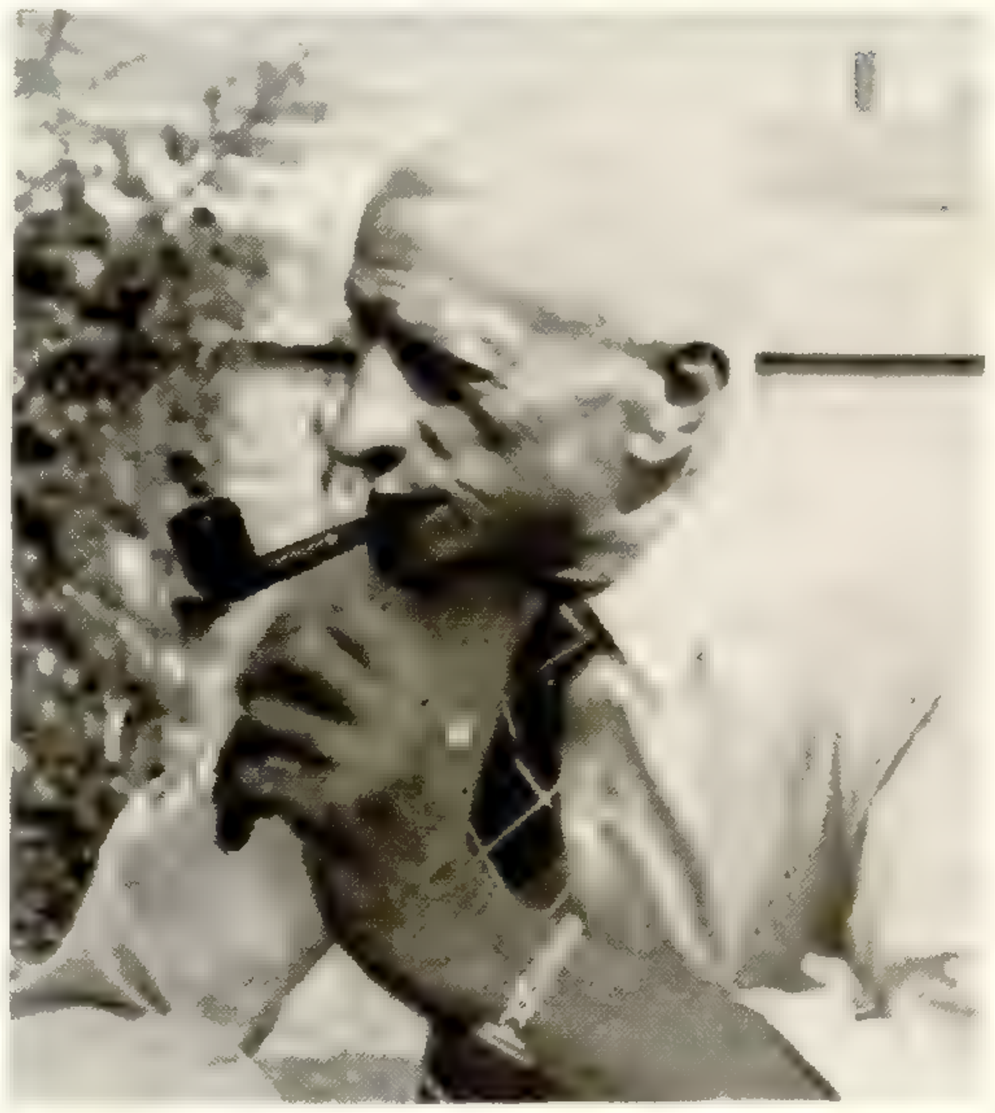
Bot. Mag.	Curtis Botanical Magazine
Fl. Mag.	Floral Magazine
Fl. and Pom.	Florist and Pomologist
Gard. Chron.	The Gardeners' Chronicle (London)
Veitch's Catlg. of Pl.	Veitch's Catalogue of New and Rare Plants

BIRD NOTES

Mr. W. Dan Quattlebaum, Arboretum ornithologist, has taken wing himself to Richmond, Va., to attend the 50th Anniversary of his college graduate class, leaving with us notation of his most recent accomplishment, a comparative check-list of the birds to be seen at Descanso Gardens. Both this list and the Arboretum bird check-list are available on request. Separated by some fifteen or twenty miles, southeast to northwest as the bird flies, The Arboretum and Rancho del Descanso, offer sanctuary to different birds from time to time, and mutual inhabitants as well, providing interesting study for bird-watchers.

GEORGE GROENEWEGEN

MARCH 3, 1876—FEBRUARY 6, 1955



A PLANTSMAN by heritage and desire, George Groenewegen, described as "a gentleman who looks as if he had stepped out of a Rembrandt canvas," left a living monument in the Botanical Garden at the University of California, Los Angeles. He joined the staff of the University in 1926 to raise trees and shrubs for the new campus in Westwood. It is reported that eighty thousand pots and cans were his responsibility in those early years and that most of the large trees on the present campus were grown and tended by him. But Mr. Groenewegen was not satisfied with raising plants for the general landscaping and shortly he began planting a botanical garden in the arroyo which crossed the campus. Through the years this garden developed under his care to become a teaching and test garden unique in southern California. The students who walk its paths and study its plants are being trained in a tradition which began with the first botanical gardens and which has been maintained by such men as George Groenewegen.

For George Groenewegen's love and knowledge of plants was inherited from his grandfather, the Hortulanus of Hortus Amsterdam. His father and brothers, reared in a world where plants were their "alphabet and daily bread," operated a nursery in Utrecht. Young George was sent to private schools, where at one time he was classmate of the late Peter Riedel,* but his knowledge of botany and horticulture was learned at home and practiced as an apprentice gardener in Erfurt, Germany and in Brussels. In 1899 he made his first trip to this country accompanying one of many shipments of palms. The following year he went to the Transvaal to obtain new palms and seeds. In 1907, after bringing another shipment of palms to this country, he worked for Bobbink and Atkins in Rutherford, New Jersey, a year later moving to Arkansas as manager of a large fruit orchard. In 1911 he became canal rider and overseer of a huge rice acreage owned by Dutch interests near Port Arthur, Texas. He arrived in southern California in 1914 where he worked for Coolidge Nursery in Pasadena at $50 a month for two years. In 1916 he moved to the Raymond Hotel in Pasadena where he had charge of the plantings until he joined the staff of the University. Retirement from the University in 1947 was a mere formality for he immediately joined the staff of the Los Angeles Country Club in July, 1947, as Assistant Propagator in charge of the conservatory. He enjoyed this position, for to him all work with plants was enjoyment, until poor health forced his retirement in July, 1953.

He is survived by Mrs. Groenewegen (Beerrendiena Plugge) whom he married in 1902, four children, and many grandchildren.

DONALD P. WOOLLEY
MILDRED E. MATHIAS

Lasca Leaves, Vol. V. 1.21.

August 15th. 1955. is the press deadline date for all prospective contributors to the autumn issue for October, 1955, and for all *Calendar Notices*, because of the necessity of completing the Index through this issue.

PLANT INTRODUCTIONS—THEIR VALUE TO US

RUSSELL J. SEIBERT

ONE CAN SCARCELY SPEAK of plant introductions into the United States without recognizing the great service rendered in this field by the U. S. Dept. of Agriculture, Plant Introduction Section in Beltsville, Maryland. This great organization was, until recently, known as the Division of Plant Exploration and Introduction. This same organization was first established by the Federal Government in 1898 as a service of Foreign Seed and Plant Introduction. From this beginning there has been a detailed published inventory of all plants introduced through this service and in its most recent inventory No. 155 the total number of introductions had reached 161,666 as of 1947. To date but still unpublished there are over 220,000 introductions.

Included in these plant introductions are every type of food and economic crop grown in the United States. It is safe to say that nearly, if not every food and other economic crop grown in the United States today can trace its more recent improved strains to at least one or several introductions made by the Plant Introduction Section. The value of these plant introduction to the American farmer and to the American economy could be measured into the billions of dollars.

The Plant Introduction Section has concentrated its efforts on locating, throughout the world, varieties and strains of our agricultural crops which would furnish the germ plasm for the constant improvement in yield and disease resistance by the established farm crops. It has also constantly been on the alert for potential economic plants which might and in many cases have furnished new agricultural industries for our farmers. Many examples of these new industries might be cited. One of interest to us in California is the Date Industry which was completely established by means of commercial date varieties introduced by the Department from North Africa and The Near East. Production has reached 17,000 tons, which in 1946 had a farm value of three million dollars. Of much more spectacular interest and importance to the American economy is the very recent Soy Bean Industry, which has resulted from a hand full of soy bean seed collected by Dorsett in Korea in 1925. Today this crop alone brings in one billion dollars a year to the American farmer.

To these may be added the Mango Industry of South Florida, The Avocado Industry of Florida and California, to name a few which trace their introductions back to the famed P. I. Numbers.

So far have been mentioned only the economic plants. What of our ornamentals from so many foreign lands? The Plant Introduction Section has contributed greatly to this field of introductions in cooperation with arboreta, botanic gardens and private cooperators. In the past it has distributed thousands of plants to private cooperators throughout the United States and many of these plants are now in the commercial trade.

In speaking of plant introductions into the United States I think of such plant explorers as Dorsett, Swingle, Frank Meyers, and David Fairchild, men who devoted their lives to the introduction of new and better plants into the United States. It is fitting at this time to pay tribute to one of the best known and most publicized of these explorers, David Fairchild. Dr. Fairchild at the ripe age of 85 left this world which was his "Garden" this past August 6th. He had been ill off and on the last few years, but felt rather good this summer's morning and went out to his beloved home garden in the "Kampong" in Coconut Grove, Florida. Once again he was with the many plants growing there which he had brought back from his travels through the years. There, as he must have desired, he departed with the living evidence of his many fond memories and the one sad thought that he must leave his devoted wife who, through their long and happy life together had ever been his strongest guiding light.

But returning to the subject at hand:

Foreign plants were first introduced into Southern California along with the missions. Our Mission Fathers and the sea captains who visited our first ports brought in the first exotics, both ornamental and economic. Among these were the grape, arundo, the pepper tree, the pomegranate, the oleander, the grains, the vegetables and the olive. Since the seventeen hundreds there have been consistently added many hundreds of exotic plants, some of which have made themselves so at home that it is hard to realize that originally they were not our natives. We need only to be reminded of the eucalyptus and the Mexican Fan palm to realize that. In fact as we traverse the metropolitan and agricultural areas of Southern California and view the thousands of plants, it is difficult save for the oaks, sycamores and California fan palm to pick out at a glance anything which is not exotic or introduced. I think that the realization of this fact more than anything else can point out the true value of plant introductions.

We now come to the roll of arboreta and botanic gardens and their part in plant introductions, which goes back many centuries in Europe and into the seventeen hundreds here in the United States. Starting these institutions and associated with them ever since has been that particular breed of man who was never satisfied with the plants in his own back yard. He has literally practiced the feeling that the grass is greener over the next hill. With this exception—he has not only gone to that "grass" but has brought it back home as well.

The botanist and the horticulturist associated with arboreta and botanic gardens have not as a rule restricted themselves to any thought that the plant they brought back must be economic. They have always strived for the plants that were different or that might bring more beauty to their surroundings. They have seldom thought of thes ornamental prizes in a light of monetary value. That phase has been left to the commercial grower, the nurseryman and the florist.

Arboreta and botanic gardens then constitute the major means by which our ornamentals have come to the United States and from whence they have filtered into our gardens, parks and street sides. Here is where you look to find that different plant that may seem to some to have no earthly use other than to beautify or to furnish another subject on which to place a label bearing an unpronounceable name. A name which at best might seem useless to remember because before too long some botanist will change it anyway! Yet it is these same plants among which someone will recognize one of beauty and place—and in many cases realize a profit.

Each arboretum and botanical garden is ever striving to find more new desirable ornamentals for the area which it serves. The Arnold Arboretum has been particularly well publicized and successful in this respect. Sargent in the early days and E. H. Wilson more recently brought back to Boston thousands of new plants, hundreds of which have found their place among the ornamentals used in much of the United States.

Our arboretum and the botanical gardens of our great region are finding their place in introducing the plants of the world particularly adapted to our unique conditions. From these introductions we shall all benefit either financially or culturally.

Millions of dollars worth of cut flowers and nursery stock are grown here every year. That income is derived from introduced trees and plants. With every new tree that is introduced the arborist has another job.

Those of us here today are in one way or another concerned with trees and other plants. Our livelihood centers around them and it is our obligation to find and make the best use of them possible. We must maintain them as a credit to our communities.

Were it not for the plants which have been introduced here before us Southern California would still be a barren waste. In our time and for future generations to come the new and improved plant introductions will make this the beauty spot it could and should be.

Delivered at
Shade Tree Conference
Nov. 13, 1954.

COMPARATIVE WEATHER RECORDS

At Los Angeles State and Country Arboretum, Arcadia, California—1954

	TEMPERATURES AVERAGE MIN.	AVERAGE MAX.	PEAKS MIN.	PEAKS MAX.	MEAN	RAINFALL INCHES MONTH	EVAPORATION INCHES MONTH
January	38.9	66.9	31.0	98.0	52.9	5.97	.950
February	42.0	79.3	34.0	93.0	60.7	2.33	1.485
March	40.7	69.9	30.0	85.00	55.3	4.04	1.735
April	47.3	74.6	39.0	93.0	61.0	.24	1.910
May	51.4	80.3	41.0	92.0	65.9	.01	3.145
June	58.0	82.2	43.0	96.0	67.6	.15	4.140
July	61.3	97.5	51.0	106.0	79.4	——	6.515
August	58.0	90.4	50.0	106.0	74.2	——	5.780
September	53.7	93.8	47.0	104.0	73.8	——	5.260
October	47.1	83.5	41.0	106.0	65.3	——	3.735
November	44.9	82.6	34.0	92.0	63.8	2.07	2.025
December	39.1	69.7	27.0	84.0	54.4	.66	1.540
				TOTAL INCHES—		15.47	38.220

J. T. McGah—May 27, 1955,
L. A. State and County Arboretum

GENERAL OBSERVATIONS:

The highest temperature of the year was recorded on July 7th, August 31st, and October 15th, when the thermometer reached 106.°F. A temperature of 90.°F. or over was recorded on eighty-three days during the year. On twenty-four days the temperature went to 100.F. or more. Thirteen of these days occurred in July.

The lowest temperature of 27.°F. was recorded on the nights of December 28th and 29th. A temperature of 40.°F. or lower was recorded on sixty-seven nights during the year. On seven of these nights the temperature was below 32.°F.

Frost was observed on forty mornings, yet the winter months were comparatively mild.

Smog was observed on one-hundred-thirty days. As observed during previous years smog was more noticeable during the months of July, August, September and October. Smog was noted on twenty days during the month of October.

1954 Rainfall was recorded on forty-six (46) days for a total of 15.47 inches as compared with twenty-five days in 1953 when only 6.83 inches fell. There was no heavy precipitation in any one storm or month. The heaviest storm of the year was during the three day period of January 18, 19, and 20th when 2.86 inches was recorded.

Evaporation measured 38.220 inches in 1954 or 5.53 inches less than in 1953 when 43.75 inches was measured.

As compared with previous years weather conditions during 1954 were favorable.

At University of California, Los Angeles, Subtropical Horticulture Area—1954

1954	TEMPERATURE AVERAGE MIN.	AVERAGE MAX.	PEAKS MIN.	PEAKS MAX.	PRECIPITATION TOTAL MONTH
January	41.7	63.2	34	85	5.13
February	45.5	73.8	39	90	6.24
March	43.9	63.6	33	73	2.94
April	50.5	67.2	43	75	0.27
May	52.7	69.4	43	79	0.05
June	55.1	73.3	47	80	0.05
July	64.4	82.5	55	89	0.00
August	60.0	79.2	54	93	0.00
September	54.5	79.9	45	88	0.00
October	48.7	73.4	43	84	0.00
November	48.5	73.6	39	90	1.78
December	42.1	66.8	30	84	1.54
				Total inches	18.00

A member of The Arboretum staff, Edward ("Ted") Pugh, previously has contributed his talents to *Lasca Leaves* (IV.1.19). This original pen and ink sketch of the Banana plant is of particular interest here because of the text and photographic illustration of the plant in bloom appearing in this issue under "Growing Notes" by George H. Spalding (pp. 68, 69). Original pen and ink drawing by Ted Pugh.

MANFRED MEYBERG AWARD

MANFRED MEYBERG, general chairman of the California International Flower Show, was honored with a testimonial dinner Tuesday, May 24, in the Sunset Room at the California Club. Members of the Flower Show Executive Committee, leading exhibitors at the 1955 show, and business associates of Mr. Meyberg's gathered to pay tribute to his inspiring leadership and unselfish giving of time and effort to this great civic event.

A plaque was presented to Mr. Meyberg by the Executive Committee, the presentation made by Roy F. Wilcox, chairman of the Flower Show in its first four years, and permanent honorary chairman.

The plaque expresses the appreciation of the executive committee to Meyberg for "the wonderful presentation of the redwood forest exhibit by Germain's, Inc., which was unselfishly withdrawn from Flower Show competition." The committee, in the plaque, also express to Mr. Meyberg their gratitude for "his outstanding leadership and guidance, as well as his unselfish devotion to the show." It concludes with the wish by the committee that he will continue as general chairman of the Flower Show for years to come.

Photograph, courtesy Cristof Studio, San Francisco

MORE TABEBUIAS AT THE ARBORETUM

RUSSELL J. SEIBERT

READERS of *Lasca Leaves* will recall our report of the flowering of *Tabebuia umbellata* [Vol. 4:77. 1954]. This species flowered again this spring of 1955 and has made excellent growth as well as surviving a colder winter.

In addition, we now have two other Tabebuias which not only survived our past winter in several cold situations, but did so as one-and-a-half year old seedlings and rewarded us with a dividend of flowers besides:

Tabebuia chrysotricha (Mart.) Standl., *Field Mus. Pub. Bot. 11:176. 1936.* The species is known by two native names, "Ipé Cab'o Clo" and Ipé Tabaco." It is growing at the Arboretum under our Accession 53-S-1580. Seeds were obtained from the Rio de Janeiro Botanical Garden through Dr. Samuel Ayres, Jr. One plant flowered at the end of March, pure dark yellow with individual flowers 2″ in diameter x 2″ long.

Tabebuia avellanedae Lor. ex Griseb., var. *paulensis.* Toledo in Arquiv. Bot. São Paulo, 3:33. 1952. This species has been identified by Dr. N. Y. Sandwith of the Kew Gardens. It came in under the name of *T. heptaphylla* and is accessioned under 53-S-628 from seed received through Mulford B. Foster of Orlando, Florida. It is natively known as "Ipé Roxo" and flowered with us in early

Continued on page 69

PLANT INTRODUCTIONS FOR 1954

PHILIP EDWARD CHANDLER

(Continued from Vol. V, No. 2, April, 1955)

Tetraplasandra meiandra (originally on the market as *T. hawaiiensis* which is actually another species probably to be available in 1955) is a fairly cold-hardy tall shrub of the Panax family (*Araliaceae*). It is native to the higher elevations of Hawaii, especially the island of Kauai near Kokai. In California its glittering 20″ alternate leaves, divided feather-fashion into five to thirteen oval leaflets, conspicuously tinged with brown, are adding new interest to lightly shaded patios where a plant 6-8′ height and far less spread is desired. The stems and branches are a glossy red-brown, structurally arresting, usually straight, and succulent especially in youth. Tetraplasandra likes leafmold and good drainage, but it is in no way difficult to grow. Some of the less gaudy forms of *Acalypha wilkesiana* may look well with it, but we particularly recommend its use with *Bergenia ligulata* (the beautiful white-flowering form with green eyes), and bronze Ajuga.

Pseudopanax crassifolium (*Aralia crassifolia. Panax crassifolium*) is a large new shrub of open growth habit (a tree in New Zealand), with emphasis definitely on lines and openess. Leaves of young plants are very narrow (1/2″) linear and rigid, toothed, and to 2′ long. Those of mature plants achieve a 3′ length, often with three or five broader leaflets. As in the case of most araliads, the flowers are inconspicuous in terminal compound umbels. Globose fruit characteristic of it in its native lands has not yet successfully matured in California. The stems are cocoa-colored, and the younger leaves are decidedly bronze. The plant suggests its fairly close relationship to *Aralia elegantissima* a good companion in landscape planting—and again, the bronze Ajuga is an ideal facer. Like its suggested companions, *P. crassifolium* prefers some shade, but it is far more cold-hardy than *Aralia elegantissima* (*Dizygotheca elegantissima*).

Philodendron wendimbe is a new hybrid between *P. imbe* and *P. wendlandi.* Like both of the parents, it is for indoor use only in California. A self-heading type (it does not have to be staked), it is adaptable in scale to placing as a single subject on a fairly large coffee table, a natural free-form of arrowhead glossy green leaves to 18″, pointed, with rosey underside, and brightly rose-bronze new leaf sheaths near the center of the plant. *P. wendimbe* is never leggy for new heads cluster around the base from infancy, giving its container that lush full look so desirable in a single plant. The leaf stalk, too, is interesting—long in relation to the total leaf, and curving, lending a structural quality of quiet distinction. There is no better way to display it than alone, in a bed of pea gravel or brown-red crushed lava, but in a composition, it combines admirably also with *Rheo discolor.* and *Hemagraphis colorata.* Culture is simple —drainage, light and regular watering, with an occasional feeding of liquid fertilizer.

Philodendron fosterianum is a hybrid developed by Mulford B. Foster in Orlando, Florida, whence it was recently introduced to California. This cut-leaf ornamental resembles *P. selloum.* except that its habit is distinctly more upright, the leaf stems ascending vase-like with less horizontal spread. Its size is comparable to that of *P. selloum,* but it is less cold-hardy and less tolerant of dry California sunshine. Nevertheless it wants strong light. Most of the plants now on the market have been grown out-of-doors, where it certainly is a striking addition to the landscape. A recent planting with *Aeonium pseudotabulaeforme,* and a ground cover of *Reineckia carnea* has created quite a conversation piece.

GROWING NOTES

GEORGE H. SPALDING

Musa ensete: close-up of blossom. Courtesy of Los Angeles State and County Arboretum.

Musa ensete, the Abyssinian Banana, is one of the tropical plants which can be used to good advantage in Southern California, particularly along the coast. It has survived some pretty cold weather in Arcadia. Two plants of gallon can size were planted out in August 1949. The soil where they were planted is black and heavy. The plants, with ample water, flourished and were well established by winter. The cold spell of 1949-50 is too vivid a memory for Southern Californians to need further comment. The bananas were frozen, of course, but had reached enough size so the heart was protected and in the spring new growth emerged. Again in 1950-51 the winter was cold and the plants were damaged but again survived. The picture of the two plants shows their size in the summer of 1954 when they bloomed and set seed. The plant dies after seeding and since it does not send out suckers must be discarded and new plants started from seed. It takes five years or more for this banana to mature to fruiting stage. It is not a plant for the small backyard, but where it can be used it is very effective for tropical accent.

The flower is shown in the accompanying picture. Close examination will show the "hands" of small bananas at the base of each "petal." One or two "petals" open each day, covering the previous day's fruit so that the flowers must be pollenated the day they appear or the fruit will not develop. The bees are very active around the plants, and quantities of seed are usually set. The flowering stem continues to elongate until it reaches a length of six feet or more.

In the mountains of Abyssinia where this banana is native, it grows to a height of 30′-40′. In California it seldom exceeds 15′-20′. It is the largest and probably the most widely cultivated of this group. It is also one of the oldest known as it was used in the sculptures of the ancient Egyptians.

Miscanthus sinensis

The Susuki Grass is one of the most beloved plants of Japan. It is planted along the banks of rice paddies and used in flower arrangements to symbolize the fall season. A very adaptable plant, it will grow in almost any location from wet to dry and does not seem to be at all particular as to the soil. It will reach a height of 4′-6′. There is a sizeable planting in the yard on the southwest corner of Alpine and Los Robles in Pasadena.

Miscanthus sinensis resembles Pampas Grass and is known in the American trade as Eulalia. It is easily grown from seed, which germinates in about 10 days. Since it is deciduous the old dead stalks should be removed each year. Use it as a bold accent group.

Beaucarnea gracilis

The Beaucarneas are sometimes placed in the genus *Nolina* but since *Beaucarnea*

Musa ensete. Abyssinian Banana: blossom nestled among the leaves.
Photograph, courtesy of Los Angeles State and County Arboretum.

is the name best known it will be used here. *B. gracilis* resembles a refined *Dracaena* with a much-swollen base. It is said to reach a height of 30′. This species is relatively slow growing and large specimens are seldom seen in Southern California. A native of southern Mexico, it prefers full sun and good drainage. The typical swelling at the base of the stem is a good means of identifying members of this genus. It also makes the rest of the plant appear light and graceful—another tropical plant that can be used very effectively as an accent in a sunny location. Propagation is by seed, which may germinate in six days or take up to 39 days. However, it is not difficult if you are patient. Growing one does not present any particular difficulties, but the young seedlings should never be kept soggy wet.

Continued from page 66

March, flowers 1¼″ in diameter x 2″ long, lavender with white and yellow throat.

Another, Accession 53-S-1582, received from Dr. Ayres through the Rio Botanical Garden, has also flowered; it is apparently the same species and variety, *T. avellanedae* var. *paulensis*.

Although the Arboretum has tried many species of these handsome flowering trees from Central America, northern South America, the West Indies, and Mexico without success, due to frost-tenderness, we now have seven species of Tabebuia represented from Southern Brazil, all of which, up to the present time, are proving hardy to at least 26°F. and will probably survive under somewhat colder conditions. We look with eager anticipation to Southern Brazil for more plants adaptable to Southern California, comparable to the Tabebuias from that area, which will substantially add to our list of beautiful flowering trees.

LONGWOOD'S GAIN—OUR LOSS

ON MAY 19, 1955, a newspaper release from Longwood Foundation, Inc., du Pont Building, Wilmington, Delaware, broke the news officially of the accepted appointment of Dr. Russell J. Seibert as director of Longwood Gardens. The announcement was made by Henry B. du Pont, president of the Longwood Foundation which operates the Gardens established by the late Pierre S. du Pont. Since many readers of *Lasca Leaves* are probably little aware of some of the significant background of the retiring Director of Los Angeles State and County Arboretum, and thereby Editor-in-Chief of *Lasca Leaves,* we take this opportunity of acquainting you with Dr. Russell J. Seibert as seen through the news release of the above date:

"Dr. Seibert, who is forty years old, has a distinguished record in the botanical and horticultural fields. Since June, 1950, he has been engaged in the establishment of the Los Angeles State and County Arboretum at Arcadia, Calif., a project involving restoration of the historic Rancho Santa Anita estate into a horticultural show place.

"A native of Belleville, Ill., Dr. Seibert was educated at Washington University, St. Louis, receiving his A.B. degree there in 1937 and his M.S. in 1938, his graduate work being conducted in association with the Missouri Botanical Garden. In 1938-39, he was an Exchange Fellow at the Arnold Arboretum of Harvard University. He received his Ph.D. degree at Washington University in 1947.

"Before going to California, Dr. Seibert was for a number of years a Department of Agriculture expert whose work took him on extended expeditions to various parts of Latin America. As a botanist, he made surveys of natural rubber possibilities in Central and South America, and, with supplies of Malayan rubber threatened by international tensions early in 1941, he was in charge of opening a Rubber Station at Marfranc, Haiti, propagating plant material with a view toward establishing a source of rubber in the Western Hemisphere.

"From 1943 to 1946, Dr. Seibert was stationed in Peru, carrying on a program of study and collection of rubber trees in the jungles of Peru, Bolivia, and adjoining regions of Brazil. At the completion of this assignment, he returned to college for completion of his work toward a Ph.D. degree.

"Rejoining the Department of Agriculture, Dr. Seibert was associated for the next two years with the Rubber Station at Turrialba, Costa Rica, continuing his work with natural rubber trees and extending his interest in other crops, including the introduction of Peruvian black walnut trees into Costa Rica for lumber and nut production. At the close of this tour of duty, he was stationed at Beltsville, Md., for six months prior to joining the California group.

"Dr. Seibert is a vice president of the American Horticultural Society and chairman of the Arboreta and Botanic Garden Committee, National Shade Tree Conference, Western Section. He is a member of the American Association for the Advancement of Science, the American Society of Plant Taxonomists, the American Association of Botanical Gardens and Arboretums, the California Academy of Sciences and the Southern California Academy of Sciences, and the Southern California Horticultural Institute. He is the author of numerous publications.

"Mrs. Seibert, the former Miss Isabelle Pring, has accompanied her husband on many of his scientific missions and has a background in the botanical field herself. She is the daughter of G. H. Pring, superintendent of the Missouri Botanical Garden, famous for his work on orchids and tropical water lilies. The Seiberts were married in 1942. They have three children; Michael, 11; Donna, 7; and Lisa, 2."

Those of us who have worked under the wise, kindly, and often inspired guidance and direction of Dr. Seibert can say little more than a deeply heartfelt regret at his leaving us, coupled with the heartiest wishes for his progressive success in the new post.

NAMES, NOTES AND NEWS

Dr. Russell J. Seibert was elected 1st Vice-President of the American Horticultural Society in April, 1955. [For further news of Dr. Seibert, retiring Director of Los Angeles State and County Arboretum, see "Longwood's Gain, Our Loss," page 70].

National Horticultural Magazine, official publication of the American Horticultural Society, has acquainted us with the fact that articles of horticultural interest from the west coast would be welcomed by their editors. This is *an invitation* to not only our own editorial board members, but past, current, and prospective contributors to *Lasca Leaves,* to submit articles of such interest to *National Horticultural Magazine.* Its stature as a periodical in this field is too well known to need further comment.

J. Howard Asper, appointed this spring to the Superintendency of the Huntington Botanical Gardens, and Superintendency of Building and Grounds of the Huntington Library and Art Gallery, has been recently appointed a member of *Lasca Leaves'* Editorial Board, representing Southern California in the interest of Arboretums and Botanical Gardens. He takes the place of Ronald B. Townsend, formerly so represented on our Board, who now has wide responsibilities as Superintendent of the Park Department of the City of Pasadena as well as holding offices in the Southern California Horticultural Institute.

Scott E. Haselton has been appointed by unanimous assent of members of the Editorial Committee to fill the place on the Editorial Board of *Lasca Leaves* formerly held by the late Alfred C. Hottes, representing Succulents. For twenty-seven years as editor of *The Cactus and Succulent Journal of America* Mr. Haselton is well qualified in this specialized field, not only for his knowledge of the field itself but also for his wide acquaintanceship editorially speaking. He is the author of *The Epiphyllum Handbook. Cacti for the Amateur.* collaborator and publisher of *Unusual Plants. Succulents for the Amateur. Glossary of Succulent Plant Terms.* and numerous short papers. Last but by no means least of interest to readers of *Lasca Leaves* is the fact that our new Editorial Board member has with most evident success carried the printing responsibility of *Lasca Leaves* for the past three years, and all those who have worked with him heartily welcome him in this new role which they hope will rival his own editorship ultimately in significance if not in number of years.

Editorial Board Membership has also been extended enthusiastically to Dr. Louis B. Martin, Plant Physiologist at the Los Angeles State and County Arboretum, with the confidence that he will grow into the shoes of our retiring Director, Dr. Seibert, representing the study and significance of Economic Plants. Dr. Martin is particularly interested in the educational value of horticulture, a field holding its own in the world of art and science.

Horace Clay. Ornamental Horticulturist from the University of Hawaii, visited Southern California this spring, spending one day in Los Angeles, but otherwise curtailing his "post-man-holiday" activities in favor of continuing his travels with his bride who accompanied him. Mr. Clay was at one time associated with Evans and Reeves Nursery.

European Travellers: Miss Elizabeth McClintock, botanist, California Academy of Sciences, San Francisco, attended the current year's Botanical Congress in Paris, and thereafter travelled in search of added knowledge and interest in her field. Southern California Horticultural Institute benefitted by hearing Miss McClintock speak at their May meeting on the subject, "Travels Through Europe and North Africa with Camera and Hortus," illustrating her talk with slides.

Philip Edward Chandler is also travelling abroad this year, spending the summer chiefly in Britain, in search of new plants and new ideas to use in his professional work with Evans and Reeves Nursery. *Lasca Leaves* ultimately will profit by Mr. Chandler's journeys, it is hoped, in a continuation of his written series of comments on "Plant Introductions, 1954," by extending them to 1955. He contributes as a member of *Lasca Leaves'* Editorial Board.

Miss Peggy Sullivan's travels in Europe this summer undoubtedly will also find an echo in the future pages of *Lasca Leaves;* she is an active member of Southern California Horticultural Institute.

The Herb Society of America, headquarters, Horticultural Hall, Boston, held its Annual Meeting in Southern California, May 19, 20, 21, with optional trip to Santa Barbara, May 22, 23. The Southern California affiliated group acted as Hostess Unit, Mrs. Sargent H. Wellman, Topsfield, Mass., national president, Mrs. Arthur D. Richardson, Altadena, local chairman of the Unit. Rancho Santa Ana Botanic Garden, Claremont, Los Angeles State and County Arboretum and Oakhurst Gardens in Arcadia, Huntington Botanical Gardens and the Library and Art Gallery, San Marino, were the highlights of the educational tours planned. Dr. Philip A. Munz, director at Claremont, and Dr. Russell J. Seibert, retiring director at the Arboretum, were edifying speakers on the work being done at these respective institutions. Dr. Samuel Ayres, Jr., spoke at the banquet meeting as president of The California Arboretum Foundation. Curator Emeritus Wil-

liam Hertrich of the Huntington Gardens greeted each of the participating members as they entered the gardens to commence their tour there. Six Units—New England, New York, Philadelphia, Western Reserve (Cleveland, Ohio), Northern and Southern California—arranged exhibits for the occasion of the official business meeting on May 20th, at the Women's University Club, Los Angeles. Instructional material vied with other types included under the motto of the Society: *Herbs for Use and for Delight.* Displays were made of: herbarium sheets, Greek and American Indian medicinals, fabrics dyed with herbs, kitchen herb charts, herb cookbooks, sachets, pomander balls, pot pourri, landscaping and garden plans, carved items, china and fabrics with herb *motif,* an herb primer in Braille—an enlightening array of "what to do" with herbs. One of the important contributions of the local Unit was *Symposium on Herbs,* speakers, Miss Ruth Randall and Mrs. Sidney A. Briggs, "California Natives"; Mrs. Leslie Stephens of Santa Barbara, "Thymes"; Miss Edna Neugebauer, "Lavenders"—a species study. Rancho Santa Ana Botanic Garden possesses one of Miss Neugebauer's herbarium portfolios on the genus *Lavandula.* The group that went on to Santa Barbara saw a number of that city's fairest and most interesting gardens including Mme. Ganna Walska's immense collections of succulents, and under the guidance of Dr. Katherine Muller, Director, visited the Santa Barbara Botanic Garden.

HERB GARDEN AT ARBORETUM

Of particular significance to The Arboretum in Arcadia is the acceptance by the Southern California Unit of The Herb Society of America, of the responsibility of purchasing herb plants and pertinent material for the promising authentic herb garden now being established on the Arboretum grounds. The Arboretum on the other hand is accepting the full maintenance of this specific garden. Mutual efforts have already made their mark in the well-planned and recently laid out garden. Extended cooperation for the future has rich promise in that which is already in operation, toward making this one of the Arboretum's worthiest projects.

BOOK REVIEWS AND COMMENTS

TWO PERIODICALS warrant significant comment in this issue of *Lasca Leaves* because of pertinent reporting elsewhere in these pages as noted below: *The Herbarist, A Publication of The Herb Society of America, No. 21* (see Names, Notes, and News, p. 71), published annually each spring. Approximately 60 pages of authoritative, informative and delightful reading in this specialized field. Includes articles of botanical and horticultural interest as well as of the fine and social arts. The current 1955 issue carries a 3rd Index, 1950-1954, the first Index having appeared with the 1945 issue covering the first 10 years, a second in 1951. List at the back, of significant articles published during the last 10 years, now available in separate printed form, at $1.00 each.

* * *

The National Horticultural Magazine. Journal of the American Horticultural Society, Inc., published quarterly, Jan., Apr., July, and Oct., in Washington, D.C. Approximately 60 pages, scholarly, well-illustrated and documented for reference in the field. Opening article in current spring issue is one by Caroline B. Strong, member of the Philadelphia Unit of *The Herb Society of America.* "Gardens for the Blind," the significance of herbs in the light of mercy, comfort and instruction. These Gardens are established widely across this country. (For other reference to *National Horticultural Magazine,* see Names, Notes, and News, p. 71.)

* * *

The Camellia Review, published by the Southern California Camellia Society, Inc., October through April, and July. The July issue of 1955 will be wholly dedicated to the species *C. sasanqua,* coming into its own for use and beauty in landscaping and for the sheer beauty of its predominantly single flowers. Significant authorities provide the authorship of the issue, and revised nomenclature on sasanquas is a feature. Extra copies are being printed, over and above those ordinarily printed only for Society members, and will be available on order from Col. C. M. Gale, Secretary-Treasurer, 40 North San Rafael Ave., Pasadena 2, Calif.—$.75 each.

* * *

Cymbidium Hybrids and Awards, Granted by Leading Societies, 1860-1954. 69 pages. Compiled by John C. Wright, San Marino, Calif. Published by the Cymbidium Society, Inc., Pasadena, Calif., U.S.A., February 1955. Cover illustration, Alexanderi 'Westonbirt,' FCC/RHS, photograph courtesy Fred A. Stewart, the only illustration. Limited to notation of awards granted by societies whose lists are readily available. $3.00.

* * *

Motion Pictures for Garden Club Programs — compiled by Dorothy S. Manks, Librarian, Massachusetts Horticultural Society, and Katherine V. Parker. Boston 1954. Price, 25 cents. Listing of 16mm films, including those of interest to garden clubs, names of sources for lending, with addresses, including state agencies, geographically and alphabetically arranged.

* * *

Landscape for Living — Garrett Eckbo. An Architectural Record Book with Duell, Sloan, and Pearce, F. W. Corporation. Los Angeles, California, 1950. $10.00.

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JANET WRIGHT, *Editor*

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"Les trois arbres" — Etching by Rembrandt (1643)
Courtesy of Edward Huntsman-Trout, Landscape Architect

LANDSCAPE ARCHITECT IN A TREE GARDEN

An arboretum is a botanical tree garden. That is to say, it is a garden devoted to the science of trees, to the story of everything about trees; and of that story there is no end.

Trees are whatever you are and whatever you will. They take care of man's needs in all manner of ways, and they respond freely to one's interest in them. For me, they rank, in this open-air world, with the resourceful earth which is our common home, and with the sky which roofs us all over.

My earliest enchantments with trees came from the childhood swing which hung from the branches of two great Cherry trees at the door, whence I looked up into the fairy-land hidden within their leafy tent; from the White Pines which I climbed to discourage the nesting of that marauder the crow; and from the ancient Apple trees whose rounding stems were reading seats without equal, where Pope's Homer, Morte d'Arthur, Robinson Crusoe and St. Nicholas were within easy reach of Sheepnoses, Northern Spies, Astrachans, and Snow Apples. With grammar school came botany. Trees rendered their quota of leaf and flower to be named and classified, to be spread to dry in the paper press, and to be mounted and labelled for the Hortus Siccus. With travel came the excitement of discovery, trees new and strange from far away, the Bald Cypress, the Norfolk Island Pine, the Royal Palm. My first job was with a nursery, planting the seeds, shifting seedlings from seed flat to thumb pot to nursery row, where saplings grew tall and straight, ready for aspiring maturity in orchard and garden. Before ever I thought of landscape architecture, trees were my familiar friends.

Trees are whatever you are and whatever you will. Some tree gave Aeneas the Golden Bough which was his 'open sesame' for the descent to Avernus. The Druids worshipped the Oak, perhaps looking backward to an ancient arboreal

Sycamores

Courtesy of Ralph C. Cornell, Landscape Architect

home. And, strangely, there are those who don't like trees. They curse the Poplar lest its roots clog the sewer. They forbid the Rubber tree lest its swelling butt break up sidewalk and curb. They cower in fear lest the Gum fall and crush the house. I like better the fair householder who said with a sigh. "Trees and husbands! Both are messy, but nice to have around all the same."

Trees are a crop—of fruit, of bark, of sap, of timber. Trees are the mantle of the hills, nursing the underbrush and guarding the vital topsoil. Trees are a delight to humankind,—shade from the sun and a shadow on the ground, flowering trees for the lover of flowers, treasure house of line and form for the artist, a wall against the stormy wind, and fallen leaves to be raked into piles by tidy garden-keepers. And whoever first said, "Go climb a tree!", must have regretted most

bitterly that age and stiffening joints prevented that he do just that.

Trees are whatever you are and whatever you will. For the archaeologist, trees provide a priceless timetable of the ages. For the historian, trees may be the only living link with names and happenings long gone. For the nurseryman-grower, they are bread and butter, and money in the bank.—and old friends and stirring new acquaintances withal. For the arborist, trees are Taxonomy, Morphology, Oecology, Oeconomy, Pathology, Phytogeny, all areas of dry and laborious erudition, but shot with magic for the lover of trees nonetheless.

For the landscape architect, trees are all of that, because the householder, the scientist, the nurseryman are all his clients. That and more, because his job is one of co-ordination and synthesis. He must take all the materials of the landscape, the site and all that is to be set on it for use and beauty, the works of the horticulturist, the engineer, the architect, and must work with them to build an out-of-doors architecture which will serve them all, professional, amateur, and general public, with *"commodity, firmness,* and *delight."*

Landscape architecture is, fundamentally, design in three dimensions, the organization and arrangement of space. In simple words, the landscape architect makes *rooms* out of doors. It may be said that his rooms have earth for floor, sky for roof, and trees for walls, although all of these are not always true. The important point which I wish to make is that the tree exists in landscape architecture, not always by any means, but primarily, as a part of a structure. It is so that it is valued and used, in relation to other trees and to other structural materials.

Massed trees make good garden *walls,* especially if the space is generous. Trees may also *furnish* the floor with their patterns of shadow on lawn or paving. Again, the high-branched spreading tree will join the sky to *roof* the garden over. The tree wall may be *solid* as with a towering hedge of clipped Pittosporum. It may also be a *lacy screen* such as the hedgerows which used to line the fields of a farm. It may be a *wall with windows,* tall trees spaced out and trimmed to frame the outlook over the countryside. Incidentally, people with view lots are often fearful that trees will rob their precious view. With co-operation, trees will make the view.

Singly or in pairs, trees may serve to mark an entrance and, as an avenue, to create a garden hall. They may justify a turn in the road, dramatize and augment a rise of ground, develop an architectural accent by contrast, screen out a blemish. And in screening, remember the divided-interest principle of camouflage. With a good tall tree alongside, the powerpole is scarcely seen, while a too solid screen may advertise what it is designed to hide.

At Santa Anita, screening is about the first thing which the landscape architect wants to see done, around all the borders. Without offence to our good neighbors in the adjoining housing tracts and the race track across the way, he would wish that the planted vistas lead without break to the hills and mountains of the horizon, particularly for the sake of the historic grounds which once were the heart of the thousands of acres of Rancho Santa Anita. With forethought, time and care, plantations of trees will do this.

If the garden be well and truly built, when you come you will not be conscious that its trees are doing duty as walls, screens and so on. But they must do these services well for your complete satisfaction and pleasure therein.

And so, the garden will be *'commodious'*, serving comfortably and well the purpose for which it was built. For the Arboretum, this *"commodity"* means too that there is place to grow all possible trees for research and study, for trial and display, and made available for the enlightenment and entertainment of the public. Hence, while some of its trees are for garden structure, others and probably the most of them will be "objects in space", furniture and decoration, to be seen and to be admired.

"Firmness" is the old-fashioned word

for sound work. When we plant trees to make a wall, or a gate, or for any other structural purpose, they must have qualities and characteristics suitable to that purpose. They must be right and fit as to size and shape, and style and structure of branch and foliage. They must be reasonably long-lived, and amenable to our soils and to our climate. The Arboretum will have no end of experimental plantings of trees, but experiments will not be for basic garden structure.

Contemporary architecture has made a great stir about "functionalism", with much profit to architectural thinking. Obviously, if one takes the trouble to make anything, it should be well-made, and it should work well. The functionalist goes farther, to insist that the finished work plainly show its "bones", an ideal which is exhibited in the traditional Japanese house, where timbers beautifully joined are an important part of the expressive beauty of the house. The same sort of matter-of-fact common sense profits garden design. Other than that, the quarrel of styles, whether Contemporary, International, Traditional, or what have you, seems trivial in the presence of the eternal quality and dignity of the tree.

Analogies to any style may be looked for and found in a tree—the stately classic of the Orange and the Laurel Bay, the Gothic of an avenue of old Elms, the Chinese Picturesque of the Deodar Cedar, and the Contemporary free-form and dynamic branching of Santa Anita's Engelmann Oak. However, that one value which the landscape architect may, and should, add is not to be had through regard for styles or fashions, but is the value of *Style*. Trees are individuals. Each is unique. They will be chosen and grown so as to develop and display *Style* as individuals, as the best of their kind, supremely expressive of that quality, that value, which is peculiar to each sort of tree. There is also the *Style* which derives from trees in association, each tree with its neighbor, and trees in groups and masses, where they may be unified by rhythmic repetition, harmonized through emphasis on a common quality, or in striking contrast. It is in this sort of order in the landscape arrangement of trees, as individuals, and in relation to each other and the world about them, that is to be found the ultimate music and poetry of trees. There are many rules set up to govern such arrangements, which are often more useful in the breach than in the observance. The best rule book is that of nature—the hardwood forest, the jungle, and the desert. Sensitive landscape design, born of observation and study, and nourished with appreciative maintenance through the years, can then realize the full complement of the beauty of trees, and so fulfill the final goal of the landscape architect, which is to crown all his work with *"delight"*.

Postscriptum.—The Arboretum is not exclusively to be planted to trees. However, an arboretum is, by definition, a garden of trees. For that reason, and because our Southern California climate is such that the tree is the plant most vital to our health and comfortable existence, herein our story is of the tree.

EDWARD HUNTSMAN-TROUT

PLANT INTRODUCTIONS FOR 1954

PHILIP EDWARD CHANDLER

Ficus decora came into this country from Belgian growers, as *F. belgica*. It resembles *F. elastica* but with blunter, definitely ovate leaves spaced closer together on the stem; and the branches occur sooner and lower on the main stem as well as being spaced closer together corresponding to the close formation of the leaves. With the advent of chilly nights, the leaves and terminal growth turn even redder than the normal propensity which is close to that of *F. elastica*, with its characteristic bright new leaf sheaths. So far, in the Los Angeles area, *F. decora* has served as a tub plant in both full sun and partial shade. One stunning planting has combined it with *Echeveria metallica*. In Hawaii, plants of perhaps the same age have grown much larger, due to the warmer nights and the total effect is of a

(Concl. on p. 84)

THE EUCALYPTUS IN AUSTRALIA

F. W. Went

For several months I have been traveling through Australia, a continent as large as the Continental United States, with a total area of 3,000,000 square miles. This is roughly the same area as is covered with coniferous forests over the whole world. In spite of its great differences in terrain, soil and climate, there is one feature which is universal in Australia: the Eucalyptus. It occurs in moist areas with over 50 inches of rainfall, but it also is found in semi-deserts with 10 inches of rain. It grows from sea-level to timberline on the Australian Alps, culminating in Mount Kosziusko, from the tropics at 10° SL in Northern Australia to the Southernmost part of Tasmania, at 42° SL. On soils with a hard-pan it forms shrub-thickets, but on deep rich soils in the mountains it grows into majestic forests of 300 ft. height. It grows in near-swamps, on rocky outcrops, in sand or on heavy clay. It forms excellent timber or can be used for paper fabrication; it is a source of oil, and has a hundred other uses. It seems as if all the other trees of the world in Australia have been rolled together into the 600 species of Eucalyptus. It is really amazing how the species of a single genus have so completely filled the very diverse ecological niches or requirements of a whole continent, at the virtual exclusion of other trees. Although Australia is geographically isolated from most of the rest of the world, restricting the exchange of plants from other areas, enough trees of other families have invaded Australia to have furnished material for the evolution of trees specifically adapted to the Australian environment. Yet it was the *Myrtaceae* which furnished the basis for most tree-needs here in Australia. As examples of other trees can be mentioned the rainforests along the Eastern mountain scarps where the tree genera have penetrated from New Guinea and the Asian tropics, and in the South the Beech (Nothofagus) forms forests. But against competition of these invading trees three quarters of all trees in Australia are Eucalyptus. There is no other part in the world of equal size which is so exclusively populated by trees of a single genus. Conifers are the only comparable group, but there we are dealing with many different genera in several families.

Although before arriving in Australia I had known about the importance of Eucalyptus, yet I was struck by its universality. For in California we know hardly more than a dozen species, and these seem to be overshadowed by *Eucalyptus globulus*, which is a species of minor importance in Australia. I saw it growing in Tasmania, as just one of a dozen of species, most of which seemed more vigorous. Of all the really beautiful Eucalyptus growing here in forests, only the *Eucalyptus viminalis* is popular in California too, but the 300-foot tall *E. regnans*, the most majestic of all I saw, or the rapidly regenerating *E. gigantea*, or the beautiful *E. goniocalyx*, or the highly frost-resistant *E. niphophila*, are never encountered with us. This seems strange, because of the very intensive introduction of Eucalyptus into California in the beginning of the century. The Los Angeles State and County Arboretum has started a very active program of introduction of other Eucalyptus species, and with the active cooperation of many foresters and scientists in Australia, and the vigorous efforts in Arcadia, we can look forward to a new era of success of Eucalyptus introduction in California.

It may be of interest to mention some of the conditions of growth of Eucalyptus in Australia, which might help us in our efforts to introduce more Eucalyptus and adapt them to growth in our country which is climatically so similar to Australia. The first point of interest is that here in Australia we seldom find a forest in which only a single species of Eucalyptus grows by itself. With the exception of *E. regnans*, 2 or 3 species always grow

together, perfectly mixed, with usually the trees alternating. Still more remarkable is that one of this combination is always a member of the sub-genus *Renantherae,* which we never grow in California. It seems as if these form sort of a complementary combination. In addition there is usually an *Acacia* such as *melanoxylon* or *dealbata* intermixed. There is a chance that the combination of an Acacia, a Eucalyptus of the *Renantherae* group and another one like *viminalis* or *fastigata* is a biological unit, of which the members stimulate each other in the sense that all together grow better than each separately. If this is actually the case there is an added reason for introducing *Renantherae* in California. For there is a good chance that we could obtain better growth of our Eucalyptus, now growing in California by itself, if we mixed the plantings with *E. gigantea* and an *Acacia.*

One of the reasons why none of the *Renantherae* of the genus *Eucalyptus* has been successfully introduced may lie in the presence of mycorrhiza in the roots of all its members, and that this has not been introduced. Mycorrhiza is a fungus which grows in and around the roots of many trees which does not harm them, but on the contrary stimulates the growth of the tree. In many cases trees normally having mycorrhiza, such as most pines, cannot be grown successfully without it. The fungus derives much of its food from the tree roots, whereas the roots receive growth promoting materials from the fungus, and in some cases the fungus seems to function as root hairs for the roots. Each tree species has its own fungus species with which it grows together. The fruiting bodies of the fungus are the mushrooms which are so abundant in the wet season in forests.

Most Eucalyptus are very fire resistant. There is hardly a natural forest in Australia of which the trunks do not show fire scars or which do not have fire-blackened bark. The old trees usually escape destruction by fire for several reasons. The driest Eucalyptus forests have a low undergrowth, which does not come up more than 3 feet, grasses, Banksia's and the typical Australian Grass Tree (*Xanthorrhoea*). A fire in such a forest remains close to the ground, and in this way the tops of the trees escape injury. This causes a typical openness of the forests through which one can see for a mile or more because of the lack of higher undergrowth. The bark of the trees is so thick that the living tissues inside are not injured. In the wetter Eucalyptus forests the shrub undergrowth is higher and a fire in such a forest usually develops into a crown-fire, burning all leaves and smaller branches. But buds buried deep in the thick bark of the heavier branches and trunks will resprout so that the trees survive, although they look rather ghost-like during the first years after the crown-fire.

The young Eucalyptus and the shrub species have another mechanism which makes them survive fires. This is the so-called ligno-tuber, a tuber-like swelling of the underground part of the stem, which survives after all above-ground parts have been consumed by fire, and from which new sprouts develop. This strong regenerative power can be observed in our *Eucalyptus globulus* which immediately resprouts after having been cut at ground-level.

The regenerative power of a Eucalyptus forest after a fire is truly remarkable. The young trees come up in very large numbers and do not seem to be crowded out by grasses or shrubs. In contrast with so many other trees they grow very rapidly when young and in a surprisingly short time they have formed a new forest after the old trees have been destroyed. But in a fully mature forest there usually are not many seedlings of Eucalyptus, except where the surface of the soil has been destroyed or in road cuts. And when young trees develop between the old ones they usually grow slowly and may die. This is definitely not due to lack of light, for Eucalyptus forests are remarkably light, partly because the crowns are not very dense and partly because the leaves hang down and thus do not take away so much light.

It is of course impossible to describe all the different types of Eucalyptus forest in detail, but I would like to say something more about the most impressive one I

have seen, the Mountain Ash (*E. regnans*) in Victoria, in the Dividing Range 40 miles N of Melbourne. Parts of this are protected as a watershed since it covers the areas from which Melbourne receives its water. The rainfall in this forest which is situated at 2000-3000 ft. altitude is about 40-50 inches per year, with another 8 inches produced by fog-drip when clouds surround the mountains. Unfortunately most of the *E. regnans* forests have been destroyed by fire or by man. But where it still stands untouched it is of an undescribable grandeur, the slender trunks without branches for the lower 150 feet, reaching straight up pale yellow or greenish towards its own light olive leaves. At their base most trees are 6-10 ft. wide, and their height varies between 260 and 300 feet. They dwarf stately tree ferns in the undergrowth. A curious sight is the number of broken branches which have plummeted down like darts, and stand upright in the ground under the trees. In between lie the long strips of bark which peel off like in our California Eucalyptus.

In looking up against these most graceful of all trees, one wonders what has made them grow so tall. One compares them of course with the California Redwoods which grow slightly taller, and with the Sierran Sugar pines, or the magnificent conifers in the Alpes Maritimes in Southern France. It is curious that nowhere in the tropics are there forests which can compare in size with the forests just mentioned, which all lie well outside the tropics, at about 40° N or S of the equator. And comparing the climates with each other, we find that all of them: Victoria, California and Southern France have winter rainfall and summer drought. During the drier months the forests all seem to be frequently surrounded by fog, which can be condensed by their needles or leaves to produce a considerable amount of precipitation, and in none of the localities the soil becomes really very dry. But the air is, especially during day in summer, very dry. This is surprising, because one might well suppose that in such tall trees the water supply would be a limiting factor in their growth. But we have seen already that in really moist tropical countries trees do not grow so tall. Therefore it is not the water supply which determines how tall a tree can grow.

Which other factor might become limiting in a tall tree? That is the translocation of food from the leaves to the root systems and to the growing cells of the stem. In work which I have carried out with tomato plants I found that the cooler the temperature, the better the sugar formed in the leaves was transported to other parts of the plant and the better it could grow. On the other hand the temperature during day had to be fairly high to obtain the highest rate of photosynthesis. When we compare now again the climates where the tallest trees grow, then we find that they are the summer drought areas, which means at the same time, that they have big temperature differences between day and night. The drier the climate, the bigger this diurnal temperature differential is. Therefore it is not so much the dryness of the summer, which makes these trees grow tall (we have already seen that the water at the disposal of their roots is always sufficient), but the warm days which produce lots of sugar in the leaves and the cool nights which are optimal for the removal of these sugars to the roots. In warmer or cooler or wetter climates we may get very large trees, but their size is not so much tallness but rather thickness, such as the enormous Kauri's (*Agathis australis*) in the forests of Northern New Zealand which reach a diameter of 30 feet, but are not over 200 feet high. The climate there is much wetter throughout the year and the big temperature differential of the summer drought areas does not occur there.

The tallest Eucalyptus trees are found in South-Westeren Australia, again in an area with summer drought, and with a total rainfall of 50 inches, which supports the suggestion put forth earlier in this article. And the *Eucalyptus regnans* which grows in Tasmania, with a considerably cooler climate and not such a pronounced summer drought is still a very tall tree, but does not go much above 200 feet.

NEW DIRECTOR AT THE ARBORETUM

DR. WILLIAM S. STEWART, chairman of the Citrus Experiment Station's Department of Horticulture, on July 12th accepted the position of director of the Los Angeles State and County Arboretum, Arcadia, and head of the Department of Arboreta and Botanical Gardens in Los Angeles County. He succeeds Dr. Russell J. Seibert.

Termed an "outstanding horticulturist of the highest qualifications" by the Los Angeles County Board of Supervisors, Dr. Stewart will assume his new duties in September as Director of the Arboretum, operated since 1953 by Los Angeles County.

In addition to continuing the established program of developing new ornamental plants suitable to culture in southern California, including thirteen counties, Dr. Stewart states that he plans to accelerate a research program for the "backyard gardener", who he points out is assuming an increasingly important role in American life. Further, the appointment as director is planned to include a research associate appointment at Cal Tech with use of the extensive research facilities on the Pasadena campus.

The 40-year old scientist was born in San Diego and was graduated from Beverly Hills high school. Dr. Stewart, who holds two degrees from UCLA, was awarded a Ph.D. in plant physiology at Cal Tech in 1939.

Prior to joining the Citrus Experiment Station staff in 1945, he served with the USDA Bureau of Plant Industry and during World War II was assigned to emergency investigations on rubber production in Mexico.

He left the Riverside campus in 1950 to spend three years with the Pineapple Research Institute in Hawaii, where he was head of the plant physiology department.

He returned to Riverside in 1953 to assume chairmanship of the Department of Orchard Management at the Citrus Experiment Station. Soon thereafter he became chairman of the Department of Horticulture, which was formed by combining the Departments of Orchard Management and Plant Breeding.

Dr. Stewart has also headed the station committee on orchard rejuvenation, which is conducting a comprehensive study of the causes of decreasing orange size and yields in Southern California. He has continued the research that led to the widespread use of 2,4-D and other plant growth regulators on citrus.

Skiing and hiking are the chief hobbies of the Stewart family which in addition to Mrs. Stewart includes Mary Lee 10, David 9, Carol Ann 4.

Upper: *Persea nubigena*

Lower: *Persea schiedeana*

PERSEA SPECIES IN CALIFORNIA

C. A. SCHROEDER

Department of Subtropical Horticulture University of California, Los Angeles

THE URGENT NEED for new Persea species or botanical relatives as rootstocks with disease resistance or which may induce higher yields and develop relatively smaller avocado trees has been responsible for the introduction of Persea species and relatives from Mexico, Central America, and other parts of the world by the University of California. The Department of Subtropical Horticulture on the Los Angeles campus initiated the importation and collection of all forms and near botanical relatives of the common avocado, *Persea americana*, more than twenty years ago, but only within the last ten years has it been possible to effectively pursue the program on an extensive scale by personal exploration and by the aid of competent collectors in the field. While many forms and species have failed to become established because of difficulties in transportation, failure of seed to germinate, incompatibility with available rootstock materials and other causes, several species have been successfully established in California and have become available for use in horticultural research. Some of these materials may have ornamental value and other potential uses; hence a brief account of them seems warranted.

Among the *Persea* species which have long been utilized in California as an ornamentl plant is *P. indica*. This hardy species is said to be endemic to certain of the Canary Islands, where it forms the dominant forest species. Some of the larger specimens are reported to attain trunk diameters of over six feet. The larger specimens in California are seldom more than a foot in trunk diameter and attain a height of fifteen to twenty feet. The broadly lanceolate blue-green leaf and pyramidal habit of the species makes it an attractive specimen plant in the landscape. The purple-black fruits attain the size of small olives, are borne in fairly large clusters, and are inedible. This species has been here for at least 50 years. Its exact date of introduction is not known.

Another species is *Persea borbonia*, the swamp-bay of the Gulf states. This species is found wild in the swampy lowlands of Florida, Georgia, Alabama and Louisiana. The plant attains the size of a large open shrub or small tree with pale green, long lanceolate leaves. In Florida and also in California it appears subject to chlorosis from various causes which are not well known at present. The fruits are about the size of a small pea and about the same form and are inedible. The swamp-bay may have some value as a landscape specimen where open branching, long lanceolate leaves with pendulant habit, and tolerance to water-saturated soils are desired. At least one introduction of this species was made by the University about 1946.

The coyo or chinnini, *Persea schiedeana*, native of Southern Mexico and Guatemala, was introduced into California about 1940. This species has been found very sensitive to frost and probably will grow only in the warmer areas of California. In its native habitat the tree attains a height of fifty to sixty or more feet with a trunk diameter of two to four feet. The large pubescent leaf is not unlike that of the loquat but with a smoother or entire margin. The young tree is frequently mistaken for a loquat by the casual or uncritical observer. The leaves commonly attain a length of one foot and a width of four or five inches. The young branches are thick and very heavily pubescent. Although the fruit generally is of inferior quality compared with most avocados, it is eaten in Mexico and Guatemala. The green fruit attains the size of a large Guatemalan type avocado, contains a large, rough, pointed seed and has a watery, stringy flesh. This species has not yet flowered or fruited in California. The soft pubescent nature of the large leaves may have some attraction as an ornamental material in frost-free exposures.

The dark, glossy green leaves of *Persea longipies* from Vera Cruz State in Mexico make this species an attractive tree of potential interest to California plant lovers.

The tree is rather upright in habit, a rapid grower, and limited observations indicate that it possesses a fair degree of hardiness to frost. The fruits are small and black, not unlike a small Mexican seedling, with little flesh of inferior quality.

Persea gigantea, the wild avocado of Mt. Uyuca, Honduras, was introduced into California in 1946. This species in its native habitat is a very large tree 60 to 70 feet tall. The coriaceous leaf is broadly lanceolate in form with considerable pubescence. The young unfolded leaves and stem tip are covered with a bright red pubescence of a color not found in most other species of Persea.

The wild avocado of Tecpan (Guatemala), *Persea nubigena,* was sent to California by Dr. Wilson Popenoe about 1938. The leathery nature of the broadly lanceolate leaves makes this plant less attractive to most people compared with other species in the group. The few specimens observed in California have shown resistance to cold comparable to the typical Mexican avocado. The fruit is small pyriform with large seed and little flesh, the skin being rather corky and russeted. The tree and all its parts, including the inflorescence, have an aspect of stiffness and hardness which are not especially attractive.

An introduction made in 1947 which has received considerable attention because of its relative ease of propagation and especially because of its precocity and heavy yields is *Persea floccosa.* This species from the mountainsides of Mt. Orizaba in Vera Cruz, Mexico, produces an abundance of small, practically inedible, pyriform fruit about two inches in diameter with corky, hard skin. The fruit is borne in large clusters. It has been hybridized with the common avocado. Observations on the progeny from these crosses are eagerly awaited with the hope that the heavy bearing habit and precocity may be induced in the hybrids or their backcrosses.

The leaf of *P. floccosa* is somewhat narrowly lanceolate in form, very leathery in texture, and with considerable pubescence, which also extends over the petiole and along the young branchlets. This species has been observed to manifest as much cold resistance as any avocado, even as young plants.

Several other species, including *P. Donnell-Smithii* and *P. skutchii* introduced by Dr. G. A. Zentmyer, and many other botanical relatives—probably of the near genera Ocoteo and Nectandra—and several unidentified introductions more closely related to the avocado are awaiting indexing and more extended observations before their characteristics and identity can be determined. It is likely that at least some of them may prove to be of value and interest to the amateur horticulturist as well as the research workers.

PLANT INTRODUCTIONS FOR 1954

(Continued from p. 77)

much more compact and superior strain of *F. elastica;* though there, as with so many plants, the warmer nights have not brought out the red-bronze in the foliage, one of the plant's most attractive characteristics. The cold tolerance of this species is not yet known.

Hebe menziesi is a little bush veronica recently brought south from the San Francisco region. Many species and varieties of hebe have been grown in the coastal south for generations, but in the opinion of the writer, this is the best of them all. Only 14″-16″ high and 20″ across, this elegant little shrub which looks well-dressed at all times, spells the happy answer for a permanent ornamental where one wants something to *stay* little. Completely evergreen, with leaves right down to the ground—tiny pointed triangles of leaves—*H. menziesi* grows easily and well in almost any soil and any exposure that is not extremely hot or dry, a sprightly low mound of good gloss and fine texture. And in addition to all these attributes, the shrubs BLOOMS profusely in spring and summer, short diagonal spikes of lacy white over the entire plant. No bugs, no virus, has yet been observed on a single plant in any garden; in no way is this hebe a "prima donna." Its extremely small scale suggests its association with things like *Lonicera nitida* and *Azara microphylla;* furthermore, it looks well alone, in 7″ fern pans.

TREE FERNS IN SOUTHERN CALIFORNIA

ALFRED W. ROBERTS

OF THE MANY TREE FERNS known, there are less than twenty species which have been successfully grown out-of-doors in Southern California. No doubt this number will increase as new ferns are introduced. Heading the list among the most popular tree ferns are *Alsophila australis* and *Dicksonia antarctica.* These two species are preferred because of their ability to adapt themselves to the climate of Southern California's coastal zones.

Alsophila australis and its robust cousin *Alsophila excelsa* (*robusta*) are found in almost every garden where emphasis is placed on tropical planting. These species grow very rapidly, forming trunks at the rate of 8 to 12 inches per year, and towering over other plants in an effort to reach fairly strong sunlight. Their graceful chartreuse fronds extend from 6 to 8 feet in length. (Trunks have reached more than 20 feet in Southern California). *A. excelsa* grows faster and straighter than the australis, and reaches heights of 40 to 60 feet in the tropical regions of Australia.

Less known, but the hardiest of the tree ferns, is *Dicksonia antarctica.* This tree fern will withstand temperatures as low as 20 degrees after its second year of growth. In its native Tasmania it must endure frost. This heavy-trunked fern is very exotic in appearance and a good plant will produce 30 to 40 fronds each year. The leaflets of this species reach almost down to the base of the frond.

Closely resembling *D. antarctica* is *Dicksonia fibrosa* from New Zealand. Its pinnules are more pointed and are a grey-green color on the under side. Because of its slower growth, this species is better suited to small areas.

The roots which add to the bulk of the trunk each year are criss-crossed. *Dicksonia fibrosa* is often mistaken for *D. antarctica.*

Also from New Zealand we have the lovely, narrow, black trunked *Dicksonia squarrosa.* The three- to four-foot fronds are produced on dark, hairy stems and assume a horizontal position when mature. This fern will foliage burn during the extremely hot, dry days of late fall. It does well in canyons near the coast or in humid areas and under such conditions it is common for young shoots to sprout from the trunk. Average height is eight feet.

Hemitelia smithii is very similar to *D. squarrosa* except that its fronds are quite soft in texture and are even more subject to foliage burn during hot, dry weather. Recommended for cool, coastal canyons. Average height is eight feet.

Alsophila armata, recently introduced from Mexico and South America, enjoys a cool, protected spot. Time will tell if this spine-leafed fern will accept our climatic conditions favorably.

Cyathea medullaris is a rapid grower and is considered by some to be as hardy as *A. australis.* Its black-stemmed fronds have reached 12 feet in length. Plants in Golden Gate Park, San Francisco, have reached heights exceeding 24 feet with a 20 foot spread, and some have trunks 16 inches at the base. Its cousin, *C. dealbata,* or Silver Fern from the Northern and Middle Islands of New Zealand, is not such a rapid grower. Several plants in their native habitat have produced trunks 40 feet high, but most mature plants reach heights of 15 feet. They have a silver sheen on the under side of their green-stalked fronds.

Concluded in next issue

California National Fuchsia Society, a unit society, as a result of a merger of two groups formerly functioning separately, sponsored a Mid-Summer Shade Plant Show on July 9th and 10th, in the Long Beach Municipal Auditorium, Long Beach, Calif. Displays of fuchsias and related shade plants, entered by the Society's many branches which extend from San Luis Obispo to Chula Vista, included begonias, ferns, African Violets, gloxinias, bromeliads, as well as commercial equipment to help grow them successfully.

Upper left: *Idria columnaris*, young plant, leafing out stage; habitat photo by Merrill. *Lower left*: contemporary specimen in Huntington Botanical Gardens; photo by Ralph Cornell. *Upper right*: leafless twig and inflorescence; photo courtesy Huntington Botanical Gardens. *Lower right*: habitat view in dry season; photo by Merrill.

IDRIA COLUMNARIS

WILLIAM HERTRICH

ONE OF THE CURIOUS specimens of desert plants that one encounters on an investigative journey through the Desert Garden of the Huntington Botanical Gardens in San Marino, and which is represented not too numerously, is a native of neighboring Lower California, *Idria columnaris*. "Living telegraph pole" it has been aptly named by visitors to its native land who see it for the first time in its towering maturity, at minimum some forty feet to a maximum recorded seventy feet. Native Spanish folk have named it "Wax Candle" or Cirio in their picturesque language, and in botanical and horticultural literature it is unaccountably called also the Boojam Tree.

Botanically, *Idria columnaris* belongs to the family *Fouquieriaceae*. It has a limited habitat, that portion of Baja California extending from approximately the thirtieth parallel southward for about one hundred miles, growing there in colonies or "forests", in one of the desert spots on the margin of the Bay of Sebastián Vizcaíno, east of Cedros Island. The "desert" in which it thrives, however, is not the arid land of inland deserts, but it is likely to be relatively low in humidity with night dews and infrequent rains and a reasonably high water table. The exceptionally limited confines of the habitat and the slow spread of the species may be accountable to some extent to the behavior of juvenile plants as compared with those that reach maturity. Young plants are vitally dependent upon at least occasional rains during the summer dry season. Mature plants, on the other hand, enter a period of estivation in late summer and remain dormant until the autumn or winter rains, a habit which juvenile plants do not acquire for several years. Consequently, during those tender years, if there is comparative drought, or too late rains, young specimens are fatally affected. Younger plants are usually pyramidal in shape, broader than high (see cut).

Once the plant is well established it has immense capacity for survival. Occasionally isolated specimens have made news in cactus and succulent literature. One, for example, was found atop a huge boulder on Cataviña Mesa—a seedling that had sent down its roots through a rock crevice to a depth of some thirty feet to the necessary soil and water beneath. Carefully measured by a curious and methodical plant hunter, over a period of thirteen years it was found to have grown six inches. Normally plants grow to heights of forty feet or more with a two-foot base, tapering upward to a relatively slim terminal. The branches are little more than twigs in relation to the trunk; they measure about two feet long at the base of the plant, shortening to a mere few inches near the top. The accompanying photographs show specimens both with and without leafy foliage, the latter condition a protective one during the dry season. The leafing out occurs again once the rains some and adequate moisture becomes available. The trunk itself is spongy inside, suitable for storing the moisture so necessary to its survival. Some trunks have been found to be fairly hollow, and it is recorded that bees introduced into Lower California for horticultural and economic purposes, have thrived by occupying Cirio trunks.

Flowers of *Idria columnaris* are small three-petalled, ivory-white to pale green blossoms appearing chiefly near the terminal, in a manner similar to those on the familiar Ocotillo plants of California deserts. Comparatively rare under cultivation, plants of various ages are observable in the Huntington Gardens, and plantings of them are reported to thrive in Vacaville, California, about 1000 miles north of the native habitat. Plants in the Huntington Gardens are either specimens collected and transplanted here, or plants grown from seed (very thin, papery, transparent) from the largest and oldest in the Gardens. The latter, somewhat over twenty years ago was about twenty feet tall—said to have been the finest public specimen known to exist. It is now close to forty-feet and in excellent condition.

THE CONTRIBUTIONS OF L. H. BAILEY TO THE CLASSIFICATION OF CULTIVATED PLANTS

PHILIP A. MUNZ

A paper given on Sept. 6, 1955 in a symposium on "The Taxonomy of Cultivated Plants", at the meetings of The American Institute of Biological Sciences, Michigan State University.

MY FIRST CONTACT with L. H. Bailey was a silent one. I remember as a graduate student at Cornell University spending a day in the stacks in the central library. It was about 1916 and I worked all day at a long table, at which Dr. Bailey also spent most of the day and although we exchanged not a word, I was much thrilled and boasted to my fellow students about it afterward. Bailey had retired as dean of the College of Agriculture by the time I arrived at Cornell in 1914 so that we did not see him on the campus with much frequency, but we new people heard about him constantly. As a matter of fact, he was in Ithaca much of the time and we caught occasional glimpses of him. Real acquaintance with him came later after I was at Pomona College and still later when I joined the staff of the Bailey Hortorium in 1944. I presume it was my connection with that staff for two years, in which the Manual of Cultivated Plants was in preparation, which accounts for my presence on the program today. It has fallen to my lot mostly not to work with cultivated plants, but the two years spent at the Bailey Hortorium (1944-1946) gave me a little insight into problems connected with their study and greatly enhanced my acquaintance with systematic literature. In fact they have been invaluable to me since in building up a library on botany and horticulture for the Rancho Santa Ana Botanic Garden.

In thinking over material for the present paper and in reading some of Dr. Bailey's early writings, I have received a number of impressions:

(1) Dr. Bailey's long life of botanical activity covered a period in which the whole concept of the species, of classification, of systematic botany in general made great growth. His own thinking naturally underwent change and he helped to shape the thinking of his colleagues.

(2) His work on feral or uncultivated plants was in itself very considerable and enough to make him rate as a systematist of first rank.

(3) His work on cultivated plants was tremendous, embracing not only titles like Cyclopedias, Hortus, Manual of Cultivated Plants, etc., but even more basic pieces of work.

As we develop the subject assigned to me for today let us examine in more detail the above three points.

First, let me say that I have been impressed again by the fact that Dr. Bailey was not a closet botanist. To him plants were much more than dry fragments mounted on a sheet of white paper. He was a field man, who collected widely in this country and abroad. Witness his excursions to most of the spots in America from which species of Rubus had been described, from San Francisco to Vermont. Think of the collections he had made of Carex over much of eastern and western North America. Remember his long trips into the interior of China, to Panama, to Brazil, to Venezuela, to the West Indies. These trips were innumerable and brought back rich harvests. They must have been many to make possible a little story he liked to tell of how he always took along plenty of money on such jaunts and whatever was left over on his return was handed over to Mrs. Bailey. He said that she always carefully put it away and when she died it had been willed to him. In this way he inherited over $50,000. He always closed his story by saying "And I had to pay inheritance tax on it."

So, he knew plants as they grew in

the wild, but he also knew them as they grew in the garden. In one of his books he says "One never knows a plant until one grows it." He certainly practiced this. Examine his little book entitled "Cross-Breeding and Hybridizing," published in April, 1892, and read the results of his own work in the garden. He wrote there: "In 1889, several hand-crosses were made among egg-plants. These fruits matured and the seeds from them were sown in 1890. Some 200 plants were grown" . . . "A dozen fruits were selected from various parts of this patch, and in 1891 about 2500 plants were grown from them." Further on, "In extended experiments in the crossing of pumpkins, squashes and gourds, carried on during several years, increase in productiveness due to crossing has been marked in many instances." As another instance, he grew a Paraguayan species of Physalis or husk-tomato, seeds of which had been sent him by Morong. He tried it in the house and out-doors without getting any fruit. But the third attempt, also out-of-doors, resulted in seed. He noted physiological differences or response. He noted the tremendous variability produced by hybridizing, saying "My experience in crossing pumpkins and squashes has now extended through five years, and although I have obtained about 1000 types not named or described, I have not yet succeeded in fixing one." In other words, Bailey amassed a vast experience from garden work. For many years it was his practice to go through seed catalogues, foreign and domestic, and order seeds of newly named varieties and forms. These he grew at Ithaca, later to make herbarium specimens. I presume in many cases his herbarium may have the only record of horticultural forms which were in the trade for a limited number of years. He says in one of his writings that he ran anywhere from 200 to 400 such plantings each year. I know from personal study that in groups like Aquilegia, Aconitum, Dianthus, Clarkia, and Thymus the herbarium of the Bailey Hortorium has much important cultivated material.

Thus as the years passed, Bailey's experience in garden and field and the acquaintance with plants as living organisms gave him the feeling that they differed among themselves physiologically and internally as well as morphologically and that often it was the former differences that were important rather than the latter. Thus, we find him urging the importance of physiology in the species concept.

Coming back to the first of the three points that I spoke of earlier, the change in concept during the long period in which Bailey worked, it seems to me that his influence helped to bring about this change, directly and indirectly. You will remember that it was the bibliography in his booklet on Plant Breeding which contained the reference to Mendel's paper on inheritance in peas. Bailey later received a letter from De Vries telling him that it was this reference that led him to seek Mendel's paper (which Bailey himself had not seen, as it was not available to him). For many years Bailey spoke and wrote about his concept of species, his ideas as to taxonomic procedure. Surely his wide influence must have been a factor, both before the discovery of Mendel's paper and later, in helping to shape the more modern taxonomic point of view.

Coming now to the second point above stated, namely the large amount of taxonomic work done by Bailey on wild plants, I believe that without this experience he could not have approached the study of cultivated species so successfully. Among his earlier studies the most important of which I am aware is the series on the genus Carex, with such papers as a synopsis of North American species in 1886 in which almost 300 species were recognized. This series continued until at least 1896. The Bailey collection of herbarium material in this genus is a notable one and as late as 1945 Bailey still hoped to go back to this early love and do something of monographic nature. I am certain that the intensive study in this genus which he carried on in herbaria in Europe as well as in America gave him a type concept and the training that prepared him for

later tasks. Then followed the period of his deanship at Cornell (1903-1913) which was not productive of taxonomic research. But after that his reports on his collections in China and elsewhere resulted in several papers describing a number of novelties, again in wild plants. And then came a new series of studies monographic in nature, all based on considerable field study, in some cases garden culture, and of course herbarium and library work. Perhaps the most exhaustive of these treatments was that of North American Rubus (a series of papers in Gentes Herbarum) a study which like the others involved groups of considerable economic importance. It is yet too early to know what the final disposition of the many species recognized in this treatment of Rubus will be. More cytogenetic and other studies are needed. Bailey has, however, made us all aware of the great complexity in this genus in North America. He has given a careful and accurate discussion of the material available to him and has illustrated it beautifully and painstakingly. Moreover, as never before, he has amassed an herbarium collection of adequate specimens for reference.

Among other papers of his later period is the one on North American species of Cucurbita (Gentes Herbarum 6: 267-322. 1943). Here, as in Rubus, he was concerned with both wild and cultivated plants and, here again, he gives us a new basis from which to proceed in the study of this genus. The same is true of his paper on grapes of North America (Gentes Herbarum 3:151-244. 1934).

To me the most amazing of all his work is that on palms. I believe it is much more voluminous than most of us realize. Beginning as an old man, at a period when most botanists would be satisfied to rest on their laurels, and living in a cold climate from which palm studies were not easy, he accomplished an astonishing lot. No one can claim this work unimportant. Certainly so large a family and one contributing so much to the economy of life in the tropics and increasingly so to that of the whole world, needs to be thoroughly understood. So far as I can ascertain his published studies on this family in the volumes of Gentes Herbarum cover just over 1100 pages with another 113 pages in collaboration with Dr. H. E. Moore, Jr. Most of us are in no position to judge the merit of this work. I do know, however, that the collection Bailey brought from the tropics and on which these studies are largely based exceeds in quality and completeness that of most or any other palm collections. His attempt was to get by actual pieces and by photographs as complete a representation of each species as possible. Remember too that while doing this field work often in very rugged and inaccessible places, he was in his seventies and eighties. I recall that when he returned to the Hortorium in the spring of 1946 from some months in Trinidad and Tobago he brought with him a mass of material. He arranged this species by species and went over it with me: photographs of and notes on habit and stature, photographs of inflorescences and other critical parts, specimens of necessary parts such as leaves, flowers, fruits. Then he showed me material illustrative of the names under which many of these West Indian palms had been known. Originally many of these names had been based on Brazilian species and Dr. Bailey showed me how different the Brazilian and West Indian plants were. This paper on the Palms of Trinidad and Tobago (Gentes Herbarum 7: 352-445. 1947) was published in Bailey's 91st year and it is a natural temptation on seeing the many new species therein described to doubt their validity. Knowing nothing about palms but seeing the material on which these were based I have more confidence in them. At any rate, for a nonegenarian to write such a paper, lucidly expresed and with each species beautifully illustrated, is no mean accomplishment. Needless to say, many of the palms studied are of considerable economic importance.

I have taken some time and may seem far from the topic assigned me, but I am impressed through this series on monographic or revisional papers by Bailey's comprehension and understanding of both

feral and domesticated species in each group. They are treated alike. In papers on blackberries, pumpkins and grapes he makes no differentiation, but discusses plants of the wild and those of the garden. And now we come to the third point mentioned early in my discussion, that of Bailey's work on cultivated plants primarily.

When we think of this work on cultivated plants there come to mind first his books like the Manual of Cultivated Plants, Hortus, and the Cyclopedia of American Horticulture. Here we see names given to plants of the garden and orchard, we are given descriptions and keys for determination. But we do not always know what goes on before such treatment is possible. In the first place, cultivated plants vary tremendously as to how much they have been modified by man. Some are almost like the wild species from which they were taken; their treatment is relatively easy if there are good monographs and floras available. Others have been modified recently enough so that we know something as to their parentage and development and the historical record in taxonomic literature is of great use. But others have been in cultivation so long that they have no close resemblance to any wild species now known. Some of these Linnaeus named, but it is not always easy to know which form, in what may be a very polymorphic species, Linnaeus knew and to which form his binominal should apply and to which others various varietal or subspecific epithets can be given. Other cultivated plants were not known by Linnaeus and yet needed names. Moreover, the general feeling, at least in America, used to be that domesticated plants were beyond the possibility of study by the systematic botanist. No less an authority than Asa Gray, who certainly dominated the field of systematic botany in Bailey's youth, felt that many domesticated groups were too complex for satisfactory taxonomic treatment.

The above ideas gradually came to Dr. Bailey and in 1918 he proposed (Science 47: 306-308) the terms *indigen* for plants of known habitat and distribution in the wild, and *cultigen* for those domesticated plants that have no known origin, whose characters separate them from known indigens, and for which in many cases there is no type specimen or exact description so as to give a clear taxonomic beginning. He found hundreds of such cases among plants of long periods of domestication. He argued that these cultigens need to be admitted into the society of recognized species. In 1905 (Science 21: 532-535) he had written that "The old-time distinction between native forms and domestic forms is arbitrary, unnecessary and pernicious. All animals are animals and all plants are plants." He acted accordingly and we find in his writings such papers as The Domesticated Cucurbitas (Gentes Herbarum 2: 62-115. 1929) and The Cultivated Brassicas (l.c., 2101267. 1930), where he treats as species what so seem to him. I do not argue that the binomials that he proposes will stand. His treatment of the genus Capsicum, for instance, may not be the acceptable one after studies such as those of Dr. Heiser are completed. His proposed names for various cultigens may not survive, but at least in many cases he took the first step. He gave a name to a definite form. He described and figured his proposed species or variety and thus made it possible to record and discuss the entity concerned.

For many years Dr. Bailey was concerned about the rigidity of our nomenclatorial procedure and its inadequacy with reference to domesticated plants particularly. He spoke and wrote repeatedly to this end. He undoubtedly helped to bring to a head the movement that has at last culminated in 1954 in a nomenclatorial code for cultivated plants and which should help in time to reduce the confusion in horticultural literature.

Not only did Dr. Bailey create the great reference works already mentioned, such as the Standard Cyclopedia of American Horticulture and Hortus, but he wrote many more specialized works, like those on Cultivated Evergreens, the Garden of Pinks, The Garden of Larkspurs, the Garden of Gourds, The Garden of Bellflowers. And all during the years he continued to

build up the herbarium in which are deposited specimens of so many domesticated plants as well as wild ones.

To me Dr. Bailey's contributions to the classification of cultivated plants lie in several directions:

(1) He more than anyone else in America helped break the prejudice against the taxonomic study of domesticated plants, and showed that they need to be approached with the same techniques and methods as do other plants.

(2) He helped develop the methodology for the systematic study of plants in general and the philosophy and point of view behind such study. Moreover, he very ably expressed all this in words.

(3) He made available by his own published works both monographic and encyclopedic treatments by which cultivated plants can be identified.

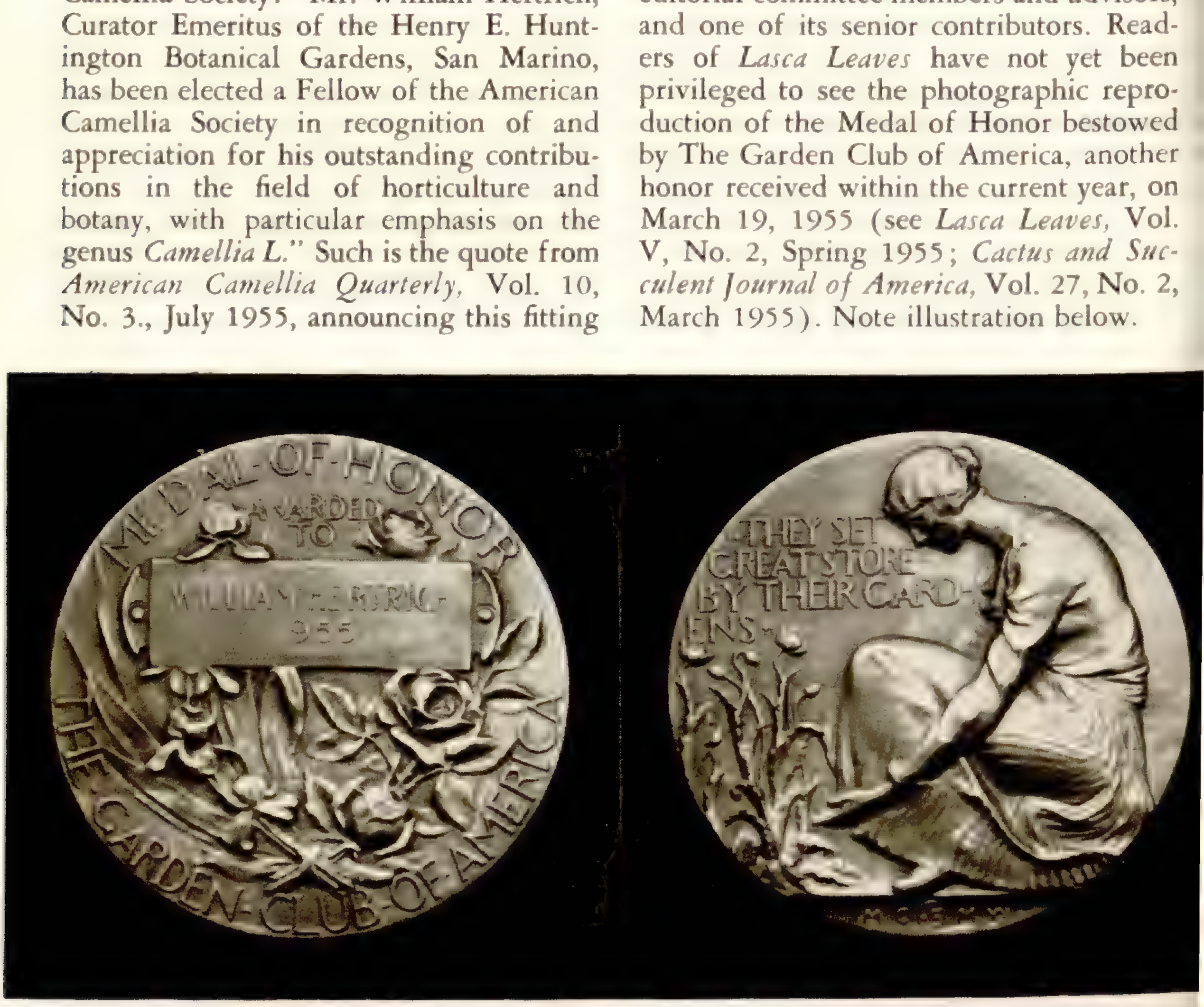
(4) He brought influence to bear which led toward a more adequate formulation of rules for nomenclature of domesticated plants.

(5) He assembled an herbarium collection of cultivated plants different from any other in America.

(6) He urged, and with considerable success, the deposition of representative material in an herbarium when chromosome counts are published, so that identification of the plant concerned can always be verified.

* * *

WILLIAM HERTRICH—Fellow, American Camellia Society: "Mr. William Hertrich, Curator Emeritus of the Henry E. Huntington Botanical Gardens, San Marino, has been elected a Fellow of the American Camellia Society in recognition of and appreciation for his outstanding contributions in the field of horticulture and botany, with particular emphasis on the genus *Camellia L.*" Such is the quote from *American Camellia Quarterly,* Vol. 10, No. 3., July 1955, announcing this fitting recognition of one of *Lasca Leaves'* valued editorial committee members and advisors, and one of its senior contributors. Readers of *Lasca Leaves* have not yet been privileged to see the photographic reproduction of the Medal of Honor bestowed by The Garden Club of America, another honor received within the current year, on March 19, 1955 (see *Lasca Leaves,* Vol. V, No. 2, Spring 1955; *Cactus and Succulent Journal of America,* Vol. 27, No. 2, March 1955). Note illustration below.



William Hertrich: Medal of Honor of the Garden Club of America presented March 19, 1955

FICUS PLANTING IN DOWNTOWN LOS ANGELES

Release for *Parks and Recreation Magazine;* printed in *Lasca Leaves*
by courtesy of Richfield Oil Corporation and F. W. Roewekamp

THERE'S A NEW LOOK to the northwest corner of Sixth and Flower Streets in downtown Los Angeles these days.

It's a look of freshness and brightness, brought there with the planting by Richfield Oil Corporation of thirteen evergreen rubber trees (Ficus retusa) in the sidewalks bordering its familiar black and gold General Office building.

Planted in cooperation with the Los Angeles Beautiful program for the beautification of Downtown Los Angeles, they are the first trees to be placed in sidewalks in the central business area.

Officially, the trees now belong to the City, having been presented to Mayor Norris Poulson by Charles S. Jones, president of Richfield, at ceremonies attended by business and civic leaders on April 14.

"We hope the planting of these trees will lead to many additional plantings throughout the downtown area," Mayor Poulson said. "Nothing could add more to the attractiveness of our city."

As a leader in the field of conservation education and encouragement, and with many trees having been removed in Los Angeles to make way for expansion, it is Richfield's aim in planting these trees to help conserve the City's beauty, Mr. Jones said.

Planted in the outer edges of the sidewalks, the trees are spaced to conform with building entrances, crosswalks and lighting facilities in accordance with the pattern laid out by Albert C. Martin and Associates, architects and engineers. Ornamental ironwork guards protect the trees and sidewalk grilles permit watering and cultivation.

See *Lasca Leaves,* Vol. IV, No. 4 p. 92, for article on "Los Angeles Beautiful", Mrs. Valley M. Knudsen,

ANNOUNCEMENT

Russella K. McGah, until current date, acting-librarian of the Los Angeles State and County Arboretum, has received certification from the same on full-time librarian status. She has been performing a difficult job under the handicap of temporary facilities, as well as almost single-handedly putting into operation a specialized library classification scheme, adapted after the scheme now in use by the famed *Massachusetts Horticultural Society* Library, initiated by its Head Librarian, Miss Dorothy Manks. When permanent housing for the LASCA Library is an achieved fact, the scheme will come into its own, in admirable operation and tribute to its current Librarian, Mrs. McGah, who hitherto has been part-time assistant to her husband, Mr. J. Thomas McGah, Plant Recorder at the same institution, known to *Lasca Leaves* readers chiefly by his signature to the official LASCA Weather Records published yearly.

* * *

J. Howard Asper, Superintendent of Buildings and Grounds, at the Huntington Library, San Marino, has been elected a Director (three years) of the Southern California Horticultural Institute.

GROWING NOTES

GEORGE H. SPALDING

ANIGOZANTHUS

One of the most interesting contributions to Southern California gardens from the land "down under" is Anigozanthus or Kangaroo Paw. This genus belongs to the family *Amaryllidaceae.* It is composed of about eight species which vary in height from 3 to 5 feet, and range in color from green to red. The foliage is strap-like resembling Siberian Iris and often has some black along the margins. The accompanying artist's drawing illustrates the form very well. The plants are in flower for a long period of time, two months or more, blooming usually in July and August in Southern California. They have the appearance of being made of felt giving a somewhat artificial feeling. As cut flowers for arrangements they are outstanding and unique. The flowers are tubular, opening into a star at the end. The tubes are extremely fuzzy; the open stars clear green usually with the anthers showing clear and yellow in the center of the star. The stems of some plants are quite black and the flowers chartreuse, a striking contrast.

The group we are growing at the Arboretum are apparently hybrids, and positive identification has not been made as yet. Three lots of seed collected locally, (Arcadia, Calif.) were received in 1951. They were labelled *Anigozanthus flavida* (branching green) *A. flavida* (branching bicolor), and *A. humilis.* The seed was sown in our regular seeding mixture (one-half Georgia Peat, one-half Sponge Rok by volume). All three lots germinated in three weeks. The plants grew well and were planted in the field nursery when one year old. The soil in this nursery is black and heavy becoming very sticky when wet and hard to the point of cracking when dry. Good growth resulted and the first blooms appeared when the plants were two years old. In 1954 all the clumps

Anigozanthus
Original pen and ink sketch by Ted Pugh

were removed from the nursery and planted in the Australian section where the soil is light and sandy. They were divided much as iris are but of course the roots are fibrous not rhizomatomous. No special care was taken in either the division or replanting so some loss was anticipated. Over two-thirds of the divisions established very well and the growth was exceptional. All plants bloomed in 1955 and the height of the flower stems was about one-half again as great as in the nursery. Crooked stems were numerous this year which created much interest and would be valuable if the flowers were used in cut arrangements.

No special care as to feeding or watering has been given these plants and they flourish. Water is applied (a thorough soaking) about every ten days to two weeks.

In addition to the hybrid group mentioned above, we are also growing *Anigozanthus manglesii.* At this writing the seedlings have just been put into the field so no reports can be made.

The Kangaroo Paws are an interesting and relatively easy group of plants to grow. They are unusual and should be much more widely used in Southland gardens.

COVER PICTURE

We are indebted to the New York Botanical Garden and to Scott E. Haselton for the color plate—not an indication of an adopted custom at present but as an experimental diversion at the end of the first five years of *Lasca Leaves* and to mark the issue of its first indexing. The reproduction appeared as an end-plate of *The Garden Journal of the New York Botanical Garden.* Vol 2, No. 1, Jan.-Feb., 1952. With it were identifying notes by E. J. Alexander, to the following effect:

One of the most interesting of jungle cacti, *Cryptocereus anthonyanus,* was first found by T. MacDougall in the jungles of the state of Chiapas in Mexico in January 1946. Until it flowered in 1950 it could not be botanically named, at which time it received its specific to honor Dr. H. E. Anthony of Englewood, New Jersey. The picture from which this color plate was reproduced was taken at its second flowering, in June 1951. The plant is one of a group of cacti requiring both heat and moisture to thrive, but differing from most of them in its climbing habit, "using aerial roots to pull itself up into the trees." Its flowers are intensely fragrant, lasting but a single night. The cream and maroon color contrast is exceptionally striking.

CALENDAR

Muriel Merrell, newly appointed Flower Show Schools Chairman for District 2-A, is pleased to announce that Course I of the 2nd Series of the National Council of State Garden Clubs Flower Show Schools for the Los Angeles area will begin on Saturday, October 29th.

In the interest of immediately improved Amateur Flower Shows, the 2nd Series has been stream-lined to cover a 3-day period of lectures, and is intended to act as a Guide and Outline for the listener rather than an extended Course of Instruction on Horticulture, Flower Arrangement and "Flower Showmanship."

The New Series has been especially designed to aid ALL garden-minded and Flower Show enthusiasts in learning more about Planning, Exhibiting and Judging Flower Shows. Discussions will cover basic Horticulture—the growing and grooming of exhibition specimens, as well as the history of Flower Arranging, various types of arrangements and their mechanics, proper use of color, correct design, PLUS the current Judging practices applied to both of these Standard Flower Show Divisions. All of the instructors will be accredited with the National Council of State Garden Clubs.

Points to be included in the lecture on Flower "Showmanship" will be the duties of the various Flower Show Chairmen, General Staging, Flower Show Schedules, proper Classification and Display.

For those who wish to work towards a National Accredited Amateur Judge's Certificate, an official proctored Examination will be given on the lectures the week following the First Course. Course I carries 5 points of credit when the examination has been successfully passed, and all lectures attended.

Enrollment is limited. Register promptly. Further information can be obtained by writing to:

MURIEL MERRELL
Flower Show Schools Chairman, District 2-A
823 North Laurel Avenue
Hollywood 46, California

NAMES, NOTES AND NEWS

Dorothy Jenkins, Garden Editor, New York Times, travelled in the southland during August, to study the field of flower seed production and the firms which handle the volumes of seeds produced for that purpose in this part of the country. Lompoc, the northern threshold of Southern California, was a particular spot of concentration, with its incredible resources and completely beautiful landscape devoted almost solely to acres of flowers for seed. Diverting from this subject briefly at the Huntington Botanical Gardens, San Marino, Miss Jenkins interviewed Mr. Hertrich on the Cactus and Succulent Collection here, with a view to publishing an account of it the second Sunday of September in the *New York Times* Garden Section.

* * *

Lasca Leaves' Editorial Board Members—Mrs. Mildred Davis and Dr. Louis B. Martin are scheduled instructors in courses for horticultural students and gardeners, opening as University of California Extension Classes for Adults, in September. Mrs. Davis is a Landscape Architect and Garden Consultant. Dr. Martin, Plant Physiologist at the Los Angeles State and County Arboretum, Arcadia, will conduct a ten-week course in Agricultural Botany and Plant Physiology, beginning on Wednesday, September 14, at 7 p.m., Univ. Exten. Center, 813 So. Hill, Los Angeles.

* * *

Fred W. Roewekamp, newly appointed as Superintendent of Park Development in the Department of Recration and Parks, gives us the following news regarding the former Forestry Division of the City of Los Angeles, and the change brought about by Charter amendment approved by the State Legislature, June 7, 1955, as of July 1, 1955: The former Division of Forestry is now under the Street Maintenance Bureau which bureau . . . is directly under the Board of Public Works. All street tree matters in the City of Los Angeles, therefore should be referred to the Board of Public Works, Street Tree Division. [For further news of Street Tree Planting in the City of Los Angeles, see p. 93].

BOOK REVIEWS AND COMMENTS

Garden Spice and Wild Pot-Herbs. Walter C. Muenscher and Myron A. Rice. Cornell University Press, Ithaca, New York. 1955. This book of 211 pages has a wealth of interesting material on most of the herbs used in seasoning and cookery. The subject matter covers descriptions of the plants, their treatment (propagation, hardiness, harvesting, drying, storing) and their culinary and other uses. A chapter on wild pot-herbs contains unusual information. Classification and naming are especially treated and a list of synonyms and glossary are added. But do not be alarmed! The book is accurate, but strictly non-technical. It was designed and illustrated by the artist Elfriede Abbe whose fifty-six plates of wood engravings not only show what the many herbs look like, but give to the whole work an old-fashioned charm of early herbals. The type used and the make-up of the book are consistent with this idea. The price is $5.75.

PHILIP A. MUNZ

* * *

Asiatic Magnolias in Cultivation. G. H. Johnstone, O. B. E., V. M. H. With a foreword by the Hon. D. Bowes-Lyon, V. M. H. The Royal Horticultural Society, London, 1955. 160 pp., 14 colour plates, tables, line drawings, 20 lithograph plates in sepia, detachable glossary, bibliography, index, and map of Eastern Asia.

A new book which can be an inspiration to every reader but most particularly to lovers of flowering trees, and to all true gardeners as an incentive to become better acquainted with this beautiful arborescent genus. Many of the group can be grown very successfully along the Pacific Coast from southernia California to British Columbia.

Mr. Johnstone is to be warmly congratulated not only on the able compilation of textual material and the charmingly readable manner in which it is presented, but also on the handsome format of the book, its excellent quality of paper and equally good printing work, enhancing the whole effect.

Valuable information is contained in the fore part of the book on the placing, cultivation and pruning of magnolias in general, on their propagation, and their diseases. Many of the points covered are applicable to local growing conditions in the western areas mentioned above, but apply to all practical considerations, wherever magnolias may be planted.

Planting young trees, grafts, and seedlings is graphically explained, as well as the problems of transplanting specimen trees which is little understood by the unitiated. Fertilizer applications is a subject well treated, and an entire page is taken up with the pruning of Asiatic magnolias, written in a most understandable manner. Propagation by cuttings, layering, grafting, budding, and by seed is given considerable space and treated most ably. Another full page is given to magnolia diseases, all of which are minor with one exception *(Armillaria mellea)* which can be troublesome under conditions favorable to its growth.

Botanical descriptions of the various species and varieties of this Asiatic group comprise the major portion of the book, with notes on geographical distribution, adequate standard references, and other pertinent information. Of unique convenience is a detachable glossary secured in the binding by an unobtrusive dark green cotton ribbon, enabling the reader to insert it at any desired place in the book, as well as seven blank pages for MS. notes at the end of each Section into which the author has divided his selection of magnolias for study.

Price $8.85 WILLIAM HERTRICH

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NOTE: Volume I, #1 appeared Oct. 1, 1950, comprised of 5 issues, through Oct. 1951. Subsequent volumes, 4 issues each, commence with the calendar year, publication dates on the 1st of Jan., Apr., July, Oct., designated respectively as Winter, Spring, Summer, and Autumn issues. Pagination is consecutive through each separate volume. One deviation from page listing is Vol. II, issue #2, a folded chart. Asterisk (*) in generic and specific listing indicates a major reference. Bold type figure (5) indicates illustration. Grateful acknowledgment is made to Joseph Schneider for assistance in indexing plant genera and species.

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